A. L. MacLean

RCEME

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TECHNICAL

BULLETIN

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(URGENT DEMAND)

(Sidney Galloway)
Colonel
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(DA Browning) Capt.

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15	TIRE		
16	BODY		
17	RECOVERY		
18	ENGINE REBUILD		
19	COMPONENTS		

	MAJOR ITEMS	QTY.
42	ACCIDENTS	
43	ENGINES REP	
44	TRANS REP	
48-49	BACKLOADED	
50-51	CONDEMNED	

Volume 9, Number 1 January 1964

This Bulletin is published and distributed by the Director of Electrical and Mechanical Engineering as a means of periodically disseminating information on technical matters, current and future Corps policy, and items of general interest to the Corps of RCEME. It is not to be considered as authority for any action. Its contents should be made known to all interested RCEME personnel.

RCEME TECHNICAL BULLETIN

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Bonus Supplement:
Selection and Development
of Executive Personnel
By RT Bogle, General
Manager, John Inglis Co Ltd.

COVER: Part of a 2149.

HOW'S YOUR ESSAY COMING?
REMEMBER the deadline for the Director's Prize Essay Competition is June 30 1964.

This publication is issued under the authority of Col A Mendelsohn, CD, Director of Electrical and Mechanical Engineering. The contents have been edited and approved by Lt Col CMR Elmsley, CD.

The Bulletin is published to assist RCEME personnel in keeping abreast of current trends and developments and to circulate interesting news about the Corps. The information and statements herein are not to be quoted as authority for action.

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EDITORIAL

In this issue we have the privilege of publishing a talk given by Mr RT Bogle, General Manager of John Inglis Co Ltd, and at one time a RCEME officer, to the DEME Study Group at the School, 29 November 1963.

The subject is "The Selection and Development of Executive Personnel".

At this point you may be saying "That's fine, but what has it got to do with me? I'm not an industrial executive – I'm a RCEME workshop control officer" or "... a sergeant running a vehicle section with twelve men in it".

Here is a quotation from the talk which shows its pertinence not only to the industrial executive, but to all of us in the Corps.

"... a manager gets work done through others through an orderly process of planning and organizing and then measuring results. This then is my definition of Managing and I believe it applies equally to the job of President as it does to a Foreman. The major difference between the job of President and that of the Foreman is not in the tools of managing but in the element of work that is to be done and where the emphasis is to be placed."

Does this not define your job?

And so, we commend this talk to you because we believe it will help you to a better insight of your present job and your performance in it, and guide you in developing capabilities to fit you for future jobs.

DEADLINE FOR NEXT TWO ISSUES

APRIL '64 – MARCH 15

JULY '64 – JUNE 1

The AHQ RCEME Officers' Club Annual Ball was held in the Officers' Mess, RCAF Station Uplands, on the 7th of February.

Guests of honour were Maj-Gen and Mrs RP Rothschild, Brig and Mrs JB Allan, and S/L JC Richard.

Mrs McNaughton, Gen The Honourable AGL McNaughton, PC, CH, CB, CMG, DSO, CD, Colonel Commandant; Lt-Col ANP Roberts, CD, club president; Colonel A Mendelsohn, CD, Director, and Mrs Roberts, grouped informally after receiving their guests.

-UPI Photo

Rear L to R: Lt CF Potter (Class Senior), Lt DP Nikiforuk, Lt JA Dixon, Lt JE Boudreau, Lt BL Code, Lt JW Lowthian. Centre: 2Lt JI Hanson, Lt MJJR Giroux, Lt JPA Leger, Lt HG Ray, Lt AE Marble, Lt VB Suddaby, 2Lt KD Baird. Front: Lt RE Deleuw; Major RF Fendick, OC Regimental Company; Colonel KR Ward, Comdt The RCEME School; Capt KI Anderson, OC Offr P1, Regimental Company; Lt BH Simms. - McLeod photo

1963 Subaltern's EME Course

By Major RF Fendick

IN COLLABORATION WITH OFFICERS OF THE COURSE

On 9 Sep 63, the 1963 Subalterns EME Course (Sub EME) began. This course is of 14 weeks duration and is the first given to young officers at the Corps School after they come to full duty. It is intended to follow directly the three phases of ROTP/COTC training and the Young Officers' Course, and its purpose is to fit officers to take their places effectively as lieutenants and later as captains in RCEME static and field units.

While a glance at the block syllabus for the latest course would not indicate any startling changes in content from previous courses, nevertheless there were two rather major changes involving course aims and the approach to instruction.

The first and most significant change is that for the first time, successful students were awarded Canadian Army (Regular) Promotion Qualification, Lieutenant to Captain Part 2B.

The second is perhaps no less important

to the training and development of the young officer. Beginning in 1962 and to a considerably greater extent on this course, instruction was for the most part based on the syndicate discussion, TEWT and exercise system familiar to CASC graduates. It was felt that:

a. The reference material for the course subjects is clear and simple, and should be comprehendable by the student reading in his own time.

b. There was therefore little value in subjecting the student to a series of formal presentations by instructors, which repeated the content of the books.

c. The primary aim should be to teach the student, through demonstration and practice, how to apply the theory of the training manuals to practical situations.

Therefore the students were assigned a heavy schedule of private reading and study, followed, during working hours, by syndicate discussion, written exercises and TEWTS. Formal instruction consisted whenever possible of talks by guest lecturers who were authorities in their field, or of demonstrations involving maximum class participation.

ASSESSMENT STRESSED

The assessment of students was a major factor in the conduct of the course. Many considerations entered into the final course gradings. Since all rating was to a very large degree subjective, it was necessary to have as wide a sampling of opinion as possible on each student's performance; therefore each student was rated frequently on a wide range of activities by several instructors. Rating was not restricted to academic gradings given for specific assignments, but was applied to the student's performance throughout all course activities. Final grading involved consideration of marks made, where applicable, but might be weighted heavily by the instructors' impression of the student's real depth of knowledge, by his demonstrated ability to translate his knowledge into practical solutions and by his ability to communicate his thoughts and ideas clearly, concisely and logically, both orally and in writing. This approach to the setting of course results was often startling to students accustomed to the more stereotyped and impersonal university system, but is valuable for two reasons:

a. It provides the young officer with an essential introduction to the assessment system which will govern his future (annual confidential reports, etc).

b. The final course report grants partial qualification for promotion, and therefore must be related to the individual's fitness for higher rank in the broadest sense.

REGIMENTAL COY REORGANIZED

It is worthy to note that this course was the first of its kind conducted since the reorganization of the former Regimental Company of the RCEME School. The old company has been divided into two companies: The former Management Platoon of Regimental Company is now the Management Company, with responsibility for teaching all management subjects including RCEME in Canada (or Static Ops). The new Regimental Company devotes itself solely to Common to All Arms subjects and RCEME Field Ops. With a major commanding each company, each subject area receives closer attention, and a better overall standard of training is possible.

The course was conducted in four general phases:

a. Military Training (Common to All Arms)

b. Management

c. RCEME Operations

d. Equipment Design and Maintenance.

MILITARY TRAINING

The three weeks of Military Training covered Tactics, Unit Administration, Training, and Staff Duties and Military Writing. This introduction to the Subalterns EME Course was a continuation of the Young Officers' Tactics Course which most candidates had completed two months before the Subaltern EME Course began. Many of the exercises completed during this phase will be valuable souvenirs for

those on the course since they include an Annual Training Directive for a Field Workshop, TEWTs on all phases of war and Military Writing exercises. Throughout this phase, continual emphasis was given to the reasons why these subjects were of prime importance to a RCEME officer:

a. Preparation for promotion examinations.

b. Providing a broad knowledge and outlook, to enable an officer to better take his place and play his part in military affairs.

c. Helping a RCEME officer to understand the problems and language of the customers he serves, thus enabling him to more easily earn their confidence and respect and be in the best position to serve them well.

MANAGEMENT

The three weeks of Management Training were a high light of the course. Mr Charles Murphy and Mr Bruce Stevens from 202 Base Workshop RCEME joined the course for this portion of the training. Knowledge gained on Management Training will be a valuable asset to all candidates in any employment, whether it be controlling the work load of a workshop or making toast in the shortest possible time by buttering it on the cold side. A considerable amount of material was covered in a short time; however, interesting exercises ensured that candidates knew both theory and practice.

A visit to 202 Base Workshop RCEME Montreal climaxed the Management portion of the course. Lectures on the organization and roles of the Base Workshop introduced the visit, followed by a tour of the workshop. The class was then divided into syndicates, which were assigned to investigate various workshop operations. The presentation of investigations and findings at a conference revealed that the class had accomplished a good deal in half a day. The students were most appreciative of the hospitality extended by Colonel GW Thompson, Commanding Officer 202 Base Workshop RCEME and his staff, and by the RCOC School, during their stay in Montreal.

RCEME OPERATIONS

The study of RCEME Operations began with visits by several senior RCEME officers who gave lectures to the class on the organizations which they represented.

Colonel A Mendelsohn, the Corps Director, gave two lectures; one on the RCEME Corps and the other on DEME. Interesting and informative question periods took place after each lecture, which gave the class an opportunity for very valuable general discussion with the Director. An enjoyable and beneficial morning with Colonel Mendelsohn passed all too quickly.

Lt-Col JP Sherren from DEME spoke on the organization of the QMG Branch and Lt-Col FJ Sergi, DEE, spoke on the organization for Research and Development within the Canadian Army. Lt-Col HM Robinson, Comd EME Quebec Command, gave the class a clear picture of RCEME organization and operations within a command. Major FW Chapman, DPers (RCEME), spoke on the AG Branch and the functions of his office, and gave the class a very valuable introduction to Annual Confidential Reports, their purpose, use and preparation. Major FG Johnson, DEP, spoke on equipment policy, development procedures and standardization. Capt GW Swallow, DEME, explained scaling in peace and war.

The class benefitted greatly from the first hand information they received. The lectures clarified, supplemented and consolidated knowledge obtained from training pamphlets and contributed much to the value of later discussions and exercises.

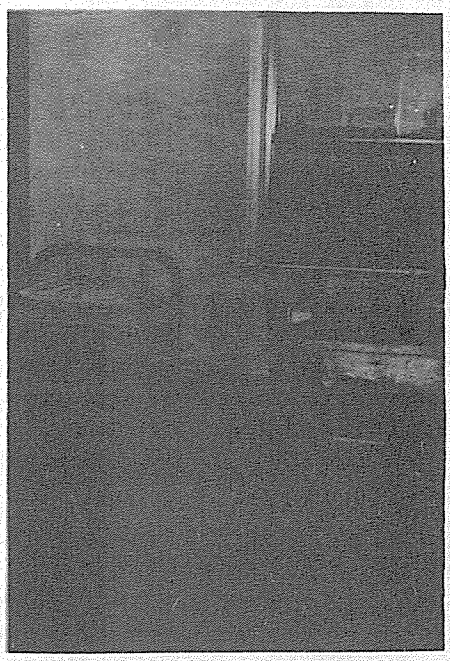
RCEME Operations in the Field followed the guest lecturers. The class became very familiar with the 1963 Field Workshop RCEME Establishment. Cloth model exercises and TEWTs gave students a good insight into the Field Workshop as it would appear on the ground. An individual TEWT conducted in the field before a Board of Officers culminated this part of the course. The TEWT was similar to the Special to Corps Part 2B Qualification Examinations of previous years but it was not the sole basis of Part 2B Qualification. The course itself, including the TEWT, was the basis on which qualification was given.

EQUIPMENT DESIGN AND MAINTENANCE

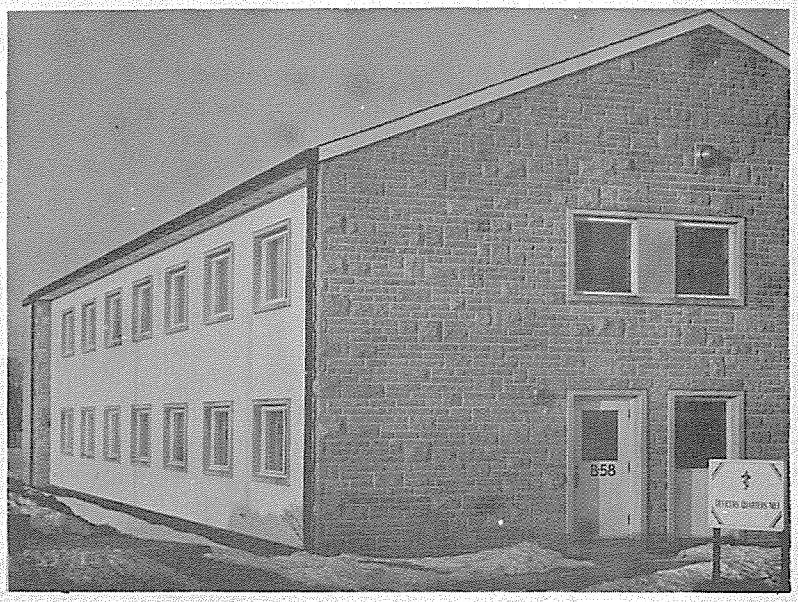
The course ended with Equipment Design

and Maintenance, covered in the three RCEME School trade companies. The class was introduced to many new equipments and by means of exercises gained an appreciation of the time and skill involved in repair tasks on them. Some equipments were examined to see how their design met ease-of-maintenance requirements. The class also spent some time in the study of RCEME trades structure and training for different trades.

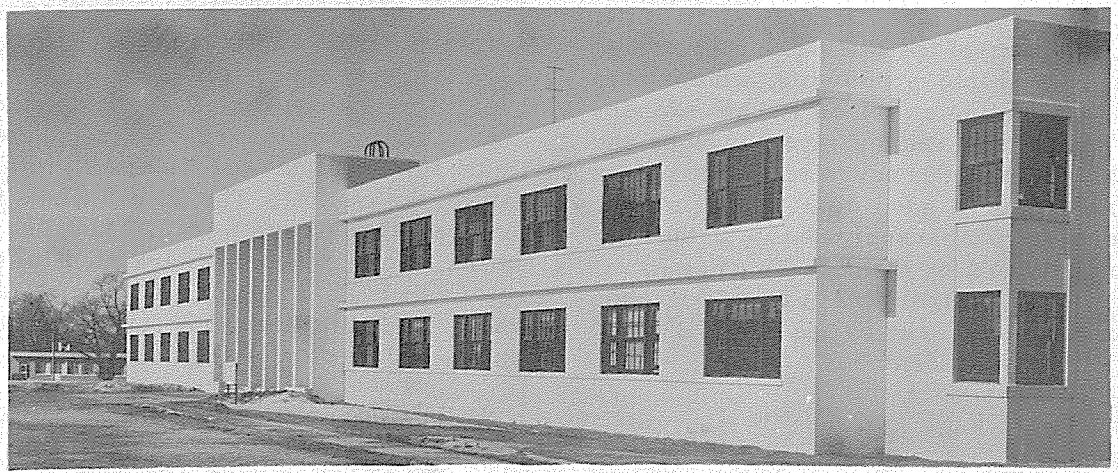
The Subaltern EME course, the last formal course most of the students will have for some time, has given the students a good start in their Army careers. It has had to meet a difficult aim in preparing subalterns for varied types of employment. Its success will depend to a very large extent on the effort which the candidates themselves, with their CO's support and assistance, continue to devote to the development of their professional knowledge and ability.



WO's & NCO's Room
250 Man Barrack Block



Officers' Quarters



RCEME SCHOOL

ACCOMMODATION UNLIMITED

By Major DA Saunders, CD

Kingston has many military visitors – more, in fact, than would normally be expected. The main reasons for its popularity are location and military significance. Of the large numbers of visitors that arrive, the majority apply to Headquarters Eastern Ontario Area for accommodation and, since that Headquarters has none, The RCEME School is generally relied upon to provide it. The School can meet these requests to varying degrees because of the types of accommodation held. There are two – 22 room quarters for officers, with two VIP suites in each. For Warrant Officers and senior non-commissioned officers, there are two – 42 room quarters, while corporals and below are provided beds in specially allotted rooms in the other ranks' quarters.

Transients arrive singly or in groups – some as large as 90 in number – and stay as short a time as a few hours or as long as ten months. It is also interesting to note that they come from all parts of Canada and the United States of America and represent every service and such diverse groups as RMC Clubs, Militia Groups, Command Boxing Finalists or the United States Marine Corps Band. Occasionally, the School is honoured by visits of dignitaries from other countries, but these are rare.

It should be made clear that the details of arrival of all guests are not known in advance. Actually, all of the visitors to the School come under three main headings, viz, personnel scheduled to attend courses whose particulars and estimated times of arrival are known; casual visitors to the area whose details of arrival have been made known to Area Headquarters; and personnel who arrive unexpectedly. For example, during the past summer concentration period, a company of the 2nd Bn R22eR arrived at the School, without prior warning, expecting to be accommodated. Understandably, there were a few anxious moments but, before long, rooms were allotted to Officers, Warrant Officers and Senior NCOs and, with the assistance of the men of the company, double decker beds were erected on the floor of the Drill Hall and bedding was issued. Thus, with a minimum of delay, facilities were provided for 118 travel wearied soldiers to enjoy a few hours of much needed rest.

Where numbers are known, the administrative detail is simple – rooms are allotted, keys are made available and the appropriate messes forewarned. However, it is the large number of unexpected visitors that make it necessary for the staff responsible for reception to be in a constant state of readiness. Between 1 Jan 61 and 31 Oct 63 the accommodation requirements of 13,690 all ranks and civilians were met. This means that almost 6000 are accommodated annually and, for comparison purposes, the following detail is given. Civilians are not shown separately, since they are given equivalent status on arrival and are recorded in the appropriate category.

Period 1 Jan - 31 Dec 62	On Course	VISITORS		TOTAL
		Expected	Unexpected	
Officers	165	944	242	1351
WOs and Sr NCOs	307	375	194	876
Men	960	2275	514	3749
TOTAL	1432	3594	950	5976

These are some of the factors that categorize transient accommodation at The RCEME School as an important facet in the overall operation of the unit.

← RCEME SCHOOL QUARTERS

WARRANT OFFICERS COMMISSIONED

LT DL CLARKE is a former Master Vehicle Technician who enlisted in the Canadian Army (Active) in Jan 41, serving in the United Kingdom and North West Europe from Jun 42 to Aug 45. He was discharged from the Canadian Army in Oct 45 but rejoined in May 47 serving since that date.

Lt Clarke was promoted Warrant Officer Class 1 in Aug 47 while serving with 3 Fd Wksp RCEME. He proceeded to North West Europe in Aug 59 where he served with 4 Fd Wksp RCEME. On his return to Canada in Nov 61, Lt Clarke was posted to the RCD at Camp Gagetown NB.

He was commissioned as a Lieutenant Specialist Officer 1 Nov 63 and posted to 14 Coy RCEME Camp Borden Ont in Jan 64.

LT WW LAIRD, a former Master Vehicle Technician, enlisted in the Canadian Army (Active) Apr 41 in Corps of RCA, later transferring to RCEME. He served in the United Kingdom and North West Europe from Mar 42 to Oct 45 and was posted to 11 Coy RCEME on his return to Canada.

Lt Laird proceeded to North West Europe with the RCD in Nov 57 and remained with that unit on its return to Canada in Nov 59. He was promoted Warrant Officer Class 2 in Aug 61 and posted to 14 Coy RCEME Camp Borden Ont.

Lt Laird was commissioned as a Specialist Officer 1 Nov 63 and posted to 8 Coy RCEME Camp Petawawa Ont in Jan 64.

LT RH SEGUIN enlisted in the CA(A) in Sep 42 and has served continuously since that date. He served in the United Kingdom and North West Europe from Mar 44 to Dec 45, returning to Canada in Jan 46. He served in the Corps of RCE and RCOC prior to transferring to RCEME.

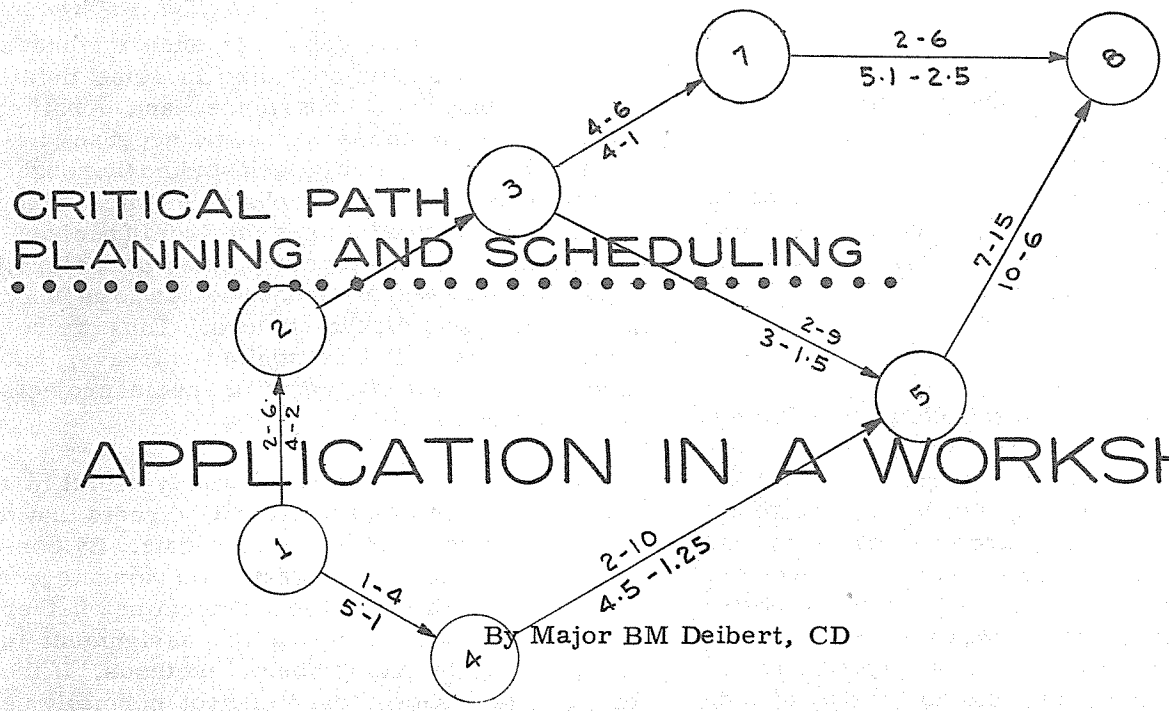
Lt Seguin is a former Master Weapons Technician who was promoted Warrant Officer Class 2 in Sep 55 on posting to Br of QMG (DEME) Ottawa Ont.

He proceeded to North West Europe in Sep 61 where he served with 4 Fd Wksp RCEME and HQ 4 CIBG.

Lt Seguin was commissioned as a Classified Officer 1 Nov 63 and posted to the RCEME School Kingston Ont during Jan 64.

LT J TATHAM was enrolled in the Canadian Army (Active) in Mar 40 in the Corps of RCOC, later transferring to RCEME. He served in the United Kingdom and North West Europe from Jun 40 to Oct 45 and on his return to Canada was posted to 16 Coy RCEME Whitehorse YT. He is a former Master Vehicle Technician who was promoted Warrant Officer Class 1 in Aug 47 and later served a tour of duty in the Middle East with 56 Canadian Infantry Workshop RCEME from Oct 58 to Oct 59.

Lt Tatham was commissioned as a Specialist Officer 1 Nov 63 and posted to 13 Coy RCEME (215 Wksp RCEME Calgary Alta) in Dec 63.



By Major BM Deibert, CD

Arrow diagrams are becoming a familiar type of chart in the army today. Bar charts, string diagrams, etc, are being replaced to a great extent by the arrow diagram as used in the critical path method (CPM) of planning and scheduling. The use of this technique will not solve all your planning and scheduling problems but it can certainly be a useful tool to assist management in making decisions on complicated planning tasks which plague most of us these days.

Preceding articles on this subject have explained the fundamentals of this technique and the mechanics of making the diagram itself. From the example projects used you can see that this method can be applied on any job where planning and scheduling are involved. Common sense will tell you not to try and apply this method where the time involved in making an arrow diagram will be out of all proportion to the time required in carrying out the job. Furthermore you may not necessarily use the method to its fullest possible extent in each instance, eg, in a particular case you may not be concerned with the scheduling, merely the plan which concerns only the logical sequence of events. No doubt most readers will by now have discovered that principles, methods, etc, can easily be learned by studying or taking a course of instruction, but when you try to apply them in real life situations, there are always some practical problems. Therefore we would like to discuss a few points which might prove to be troublesome in the application of CPM.

Human beings have a fascinating, almost automatic, tendency for resistance to change. Right about now you are probably ready to voice your scepticism and enumerate a dozen reasons why CPM cannot be applied to your work. Probably the most common argument brought out sounds like this: "There are so many unknowns and variables in our workshop programs that it is virtually impossible to make a sensible arrow diagram for any project". True, there are always so many things which can change our plans, or at any rate, the estimated completion dates. Examples are lack of spare parts at the desired time, machine tool failures and availability of manpower. However these are problems we have to cope with no matter what planning method we may choose. Furthermore, while the non-availability of resources may affect a schedule, generally speaking it does not change the plan, ie, it does not alter the logical sequence of activities. Naturally if spare parts are not delivered on time your estimated duration times of some activities may be changed but very seldom is the plan changed.

Another difficulty in establishing the use of CPM is the lack of indoctrination. Clearly it is not very logical to use a planning method which is understood only by the originator of the plan. Fortunately it is not too difficult a technique to learn and since it is now included in the management training portion of some of the RCEME School courses, this obstacle should eventually disappear.

One Real Problem

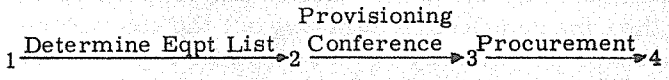
There is one real problem which can be an onerous one for anyone who tries to apply CPM to too many jobs in a workshop. With the hundreds of jobs in progress at any one time, it would be a hopeless undertaking to try and work out the inter-relationships of those jobs which are dependent on the same set of resources. In 202 Base Workshop there are approximately 300 work orders open at any one time, representing approximately as many jobs or 'projects' if you like. If, for the sake of argument, 15 per cent of these work orders applied to the machine shop, it would be a most complicated undertaking to diagram them in a way which would establish all their inter-relationships, ie, to show the correct technological sequence of all activities and take into account manpower and machine resources. Then think of the complications introduced when you have to consider the support work these same men and machines have to carry out for the other workshop sections on job cards. The work content from these sources probably fluctuates to a great extent. Fortunately not all resources in the machine shop are critical to the point where you have to schedule too tightly. Taking the machine shop in 202 Base Workshop again as an example, experience has shown that there are really only two machines which seem to be continually loaded; the universal punching machine and the electric shear. When you can narrow the critical resources down to this order, you have reduced your problem to the point where it falls within the realm of the possible.

We are convinced therefore that CPM can be used on some of the large or important jobs in any workshop. This is especially true where there are repetitive jobs. In such instances all activities should be known in some detail through previous experience, and duration times should be known with some accuracy because they have probably been studied thoroughly and proven. The only obstacle which might hinder proper scheduling is the lack of replacement parts, which we have pointed out before, is an ever-present headache and has to be faced up to under any circumstances. Thus we recommend that CPM be applied whenever you have large repair programs or special projects with a tight EDC.

You might find it particularly useful in a situation where higher authority directs that a project be completed by a certain date. By constructing the arrow diagram and working out the critical path you can soon determine whether it is possible to carry out the assignment in the time allotted using normal methods. If the critical path shows that it cannot normally be done in that time, you are at least in a position to determine which activities must have their duration times reduced if the EDC must be met. These are the activities in the critical path.

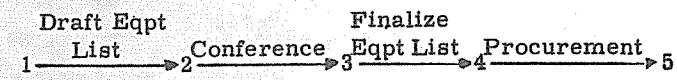
Some Useful Techniques

We would like to mention some techniques which might prove helpful to those who are attempting to use CPM in planning a project. Probably the first pitfall that most planners will fall into is the tendency to get bogged down in unnecessary detail. By all means consider all factors in great detail during the preliminary study in which you define the problem and list all activities of the job. Do not, however, break down the activities into greater detail than is absolutely necessary for the purpose of the diagram. Suppose you had a situation which at first glance looked logically like this:

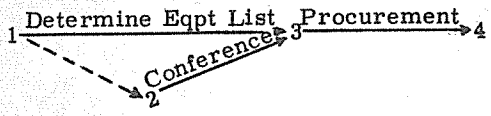


A more careful analysis of the first two activities may reveal that 2-3 does not necessarily follow 1-2 in such a clear-cut way. In actual practice you might find that some preparatory work is done in listing equipment, a conference

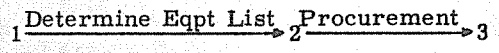
is called to discuss the matter and the equipment list then finalized before procurement is actually effected. To present the activities correctly in all detail the arrows should appear in the following sequence (by introducing another activity):



To reduce the number of activities, the sequence could be charted thusly, using the original list of activities:



Activity 1-3 would in this case encompass the initial and final listing of equipment. Note that the primary logic has been retained since we are stating that 1-3 and 2-3 must be completed before 3-4 can be carried out and that sometime between the beginning of 1-3 and the beginning of 3-4, activity 2-3 must be completed. The only difference between this diagram and the preceding one is simply in the amount of detail depicted. Of course, the simplest diagram would be:



if everyone was aware that activity 1-2 included the provisioning conference.

One Inherent Feature

This may be an opportune time to point out that one of the inherent features of CPM is that the very act of listing the various activities of a project and determining their logical sequence forces you to examine all aspects in great detail. This could conceivably lead to suggested improvement in procedures and methods normally used on the job.

When it comes to scheduling, there is always the dilemma of how long each activity should take, in other words, what is its normal duration time. Obviously the duration of most activities could be shortened considerably by using a greater amount of resources, eg, men and machines. However, this usually has the effect of increasing the cost. Therefore by normal duration time we mean the time it takes using the best known methods and employing all resources in the most economical manner. This can be illustrated by a hypothetical case. To dig a hole six feet long, four feet wide and six feet deep it would probably take an average man one day. At $1.50 an hour for eight hours the cost of such a hole would come to $12.00. We could use two men to dig the same hole but because it is not big enough, it is doubtful if two men could dig it in half the time, in other words they would have to work at less than maximum efficiency and consequently it would probably take them five hours. The cost of the hole would therefore be 2 x 5 x $1.50 = $15.00. Therefore, all things being equal, the normal duration time for this activity would be one day.

Another question frequently asked is the difference between an 'activity' and a 'restraint'. An activity is some definite time-consuming aspect directly related to the project at hand. A restraint on the other hand is an outside factor which can be regarded as an activity in another diagram but is such that it can influence the activities of the project being charted. For example, in the Bobcat SEV Kit Development Program, one of the activities listed is the trial installation of each prototype kit in a Bobcat APC. Clearly such an installation cannot be accomplished until a vehicle was actually provided. Since Bobcats are not stocked in Canadian Army depots it is essential to list the supply of this vehicle as a restraint since it is not readily available. The supply of the vehicle was not an activity under the SEV kit program but an activity of the vehicle production program. However it was of such importance to the SEV kit program that special notice has to be taken.

Use a Time Basis

One way to enhance the value of an arrow diagram is to put it on a time basis. Conventional charting techniques have always shown work estimated against a time frame. Therefore it is difficult for many of us to grasp the

true significance of an arrow diagram unless the activities are charted directly against a time base. In this article we will suggest two methods of putting an arrow diagram on a time basis.

The first method entails no alteration to the arrow diagram but requires a conversion chart which relates event times to calendar dates. Assuming you know when the project is to begin, list all the working days (weeks or months if that is the basis for your duration times) for the period covered by the project. Beside each working day (week or month) record the event times in numerical sequence starting with event time "1" opposite the beginning date. To illustrate this method, we will show a conversion table for Figure 11 (page 9) of the previous article in the Apr 63 issue. Assume that the duration times are shown in days and the project is to start on 13 Jan 64.

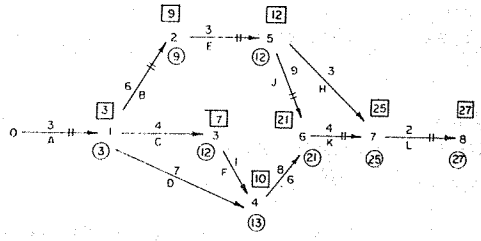


Figure 11

January 1964

Date	13	14	15	16	17	20	21	22	23	24	27	28	29	30	31
Event Time	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15

February 1964

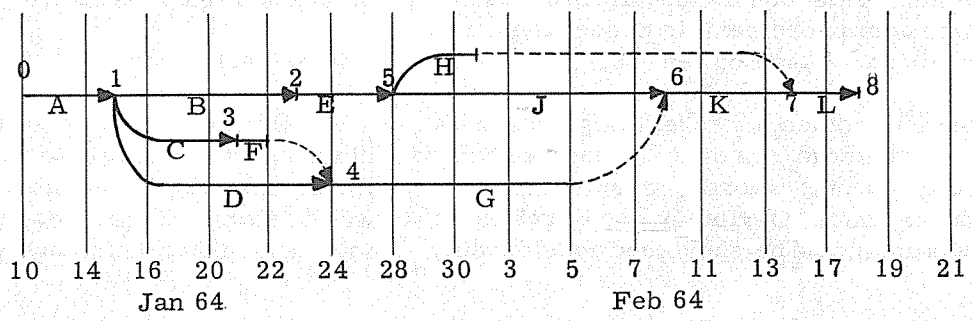
Date	3	4	5	6	7	10	11	12	13	14	17	18	19	20	21	24	25	26	27	28
Event Time	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35

Any event time on the arrow diagram can now be readily translated into a calendar date. For example, the earliest event time for Event No 4 is 10, which corresponds to 24 Jan 64 on the conversion table. The latest event time for Event No 4 is 13 which would be 29 Jan 64.

Another Method

Another method of putting an arrow diagram on a time basis is to plot the arrows on graph paper and making the lengths of the arrows proportional to the duration times. Using Figure 11 again, the diagram could be drawn in the following manner:

In this diagram the horizontal span of the solid portion of an arrow shows the duration time. The broken portion of the arrow represents total float time. As you can see, total float time for each activity is depicted graphically. This float time can be at the beginning (tail) or the ending (head) of the arrow depending purely on personal preference. However it will be seen that



in order to depict the latest event times graphically, the total float (broken portion of the arrow) must be shown at the beginning of the arrow. This can easily be seen by checking activity 4-6. If the beginning of the arrow were broken, then the solid portion would start at the 29 Jan line, not as now shown. In other words, the diagram as it is now shows all activities starting as soon as possible.

The two methods of putting an arrow diagram on a time basis can be compared as follows:

a. The conversion table is easy to make and provides some degree of flexibility should it be necessary to alter duration times as the project progresses. If this should arise, only event times affected have to be changed on the arrow diagram. The conversion table remains the same. It may be necessary to extend the conversion table if the estimated completion date of the project goes beyond the calendar dates shown on the table.

b. The second method results in a diagram which embodies the desirable features of the familiar bar chart but it is much more difficult to draw. However it is quite obvious that if a duration time of only one activity changes, a large portion or even the entire diagram may have to be re-drawn.

To conclude this article, it is imperative to reiterate that CPM is not a magic formula which banishes hard work and need for common sense in planning and scheduling. It will provide the benefits of a plan which has been thought out in detail and logically put together. It provides a "birds eye" view of a project and can be a useful medium for communicating the initial plan as well as progress during the implementation phase. It can be a valuable supplement to your existing planning and scheduling methods if applied to critical or cumbersome projects.

WELL, WELL, ANOTHER SUCCESSFUL "HAPPY HOUR" IN THE SERGEANTS' MESS!

IN RETROSPECT

The Award of the Bronzen Kruis (Bronze Cross)
(The Netherlands)
to
G 14119 Corporal William Oliver Pearson
75 Light Aid Detachment, RCEME
attached to the
21st Canadian Armoured Regiment (GGFG)

By Lt-Col RH Hodgson CD

The late Corporal Pearson (left) and Craftsman Larry Arseneau D125802

Successful support of an armoured regiment in combat depends upon, among other things, a skilled welder with a natural flair for improvisation and a knowledge of expedients. Corporal William Oliver Pearson had both of these attributes.

His award of the Bronze Cross by the Netherlands Government on the 7th of December 1945 was given for "Behaving gallantly and tactfully opposite the enemy, and showing an outstanding devotion to duty during the operation for the liberation of Netherlands enemy-occupied territory."

In the spring of 1944, while preparing for the invasion of Europe, a competition was held for the design of a protective floor for the Humber Scout Cars. Pearson's design was selected from the entries of the LADs and brigade workshops. His patterns and installation procedures were used to modify all the scout cars in 4th Canadian Armoured Division. His reward was the expressions of gratitude of at least two scout car drivers from the Regiments' Reconnaissance Troop for saving their legs, if not their lives.

Pearson's citation describes his performance and proficiency as a welder:

"On 25th October 1944, near Wouwsche Plantage, the command tank of the Regiment developed trouble requiring a welding job to be done immediately or the tank to be removed

from the battlefield. It was vitally important that this command vehicle remain in action. The Regiment was holding firm on an exposed left flank; however, accurate shelling and anti-tank fire had already eliminated one complete squadron. Realizing the necessity of his work and fully aware of the danger that faced him, Corporal Pearson drove his 'soft-skinned' 15 cwt welding truck forward to the command vehicle.

"Although enemy shelling was heavy, Corporal Pearson, with utter disregard for his own personal safety, completed the welding job on the command vehicle. This task took almost two hours but when the Regiment moved forward into action Corporal Pearson had the command vehicle ready for action despite difficulties under which he laboured."

His citation ended with: "This is but one of the many instances when Corporal Pearson showed devotion to duty and disregard for personal safety that enabled the necessary vehicles and weapons to be available for action against the enemy. His work, whether in the workshop or under fire, has always been of the highest calibre. The difficulties under which he was required to work and the calm, cool efficient manner in which he carried out these duties was a source of inspiration to all members of the Regiment."

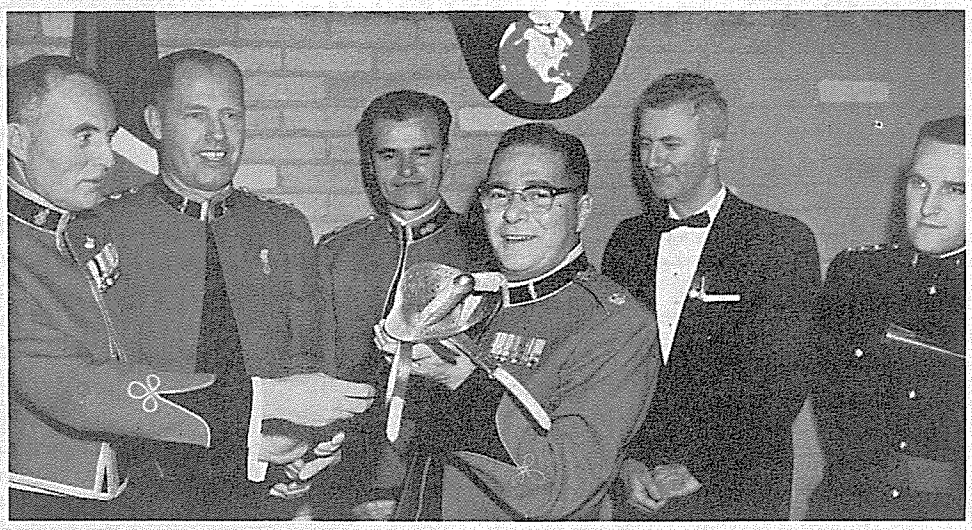
William Oliver Pearson served overseas in the First World War with the Royal North West Mounted Police and with RCOC and RCEME in the Second World War. He died of a heart attack – on the job with a torch in his hand – at age 64 on the 10th of September 1962 at Vancouver, BC.

RCEME MILITIA

CHANGE OF COMMAND IN SUDBURY

As reported in the October 1963 issue of this Tech Bulletin, Major LM Ramsey succeeded Major EC Harber as commanding officer of the 33rd Tech Sqn on 8 Nov 63.

Below is a picture of the change-of-command sword ceremony. Brigadier HE Brown, OBE, ED, CD, GOC Central Ontario Area, is receiving the sword from Major Harber before presenting it to Major Ramsey. Also shown are Major Fern Dionne, Major GO Machum, CO from 1953 to 1956, and mess president Capt RS Godwin.



- "Inco Triangle" photo

The International Nickel Company of Canada, Ltd.

RCEME SCHOOL

VEHICLE MECHANIC TRAINING

By Capt WA Thomas

In 1958 the planners started drafting the new vehicle mechanic trade specifications. Finally, in 1963 the task was completed. It was time well spent, because now for the first time in the history of our corps, there is a clear and explicit statement of the technical requirements of the trade at each level.

As the largest group of tradesmen in RCEME is composed of vehicle mechanics, it is fitting that RCEME officers, warrant officers and NCOs should be aware of the significant differences between the new specifications and their predecessors. Thus these words regarding the differences and also the method of training at Vehicle Company. Incidentally, please do not hesitate to comment on how this formal training may be improved. For example, prior to the implementation of the new trade specification a field officer recently remarked:

"Say, how are you training vehicle mechanics these days?"

The reply: "More time in the coveralls and less time with the slide rule. And why do you ask, sir?"

The reply: "Last week one of your recent graduates experienced difficulty removing a wheel from the front axle of a jeep. Not to be outdone he promptly tried removing the wheel using a hacksaw!"

The rejoinder: "Well, at least he remembered his artisan training!" That of course is one reason for writing a new trade specification.

GROUP 1 TRAINING

Group 1 vehicle mechanics who started formal training after Jan 63 are qualified either wheeled or tracked mechanics. They are not qualified in both trades as are those who started their group 1 course prior to Jan 63. Hence if you have a group 1 tracked mechanic working on a wheeled vehicle be prompt with the supervision – he might use a hot wrench (oxy-acetylene torch) instead of a hacksaw to remove those wheels!

The new group 1 wheeled man is trained specifically on 1/4, 3/4, and 2 1/2 ton SMP trucks, while the tracked mechanic is trained primarily on the Centurion and Sherman tanks. The significance of this change is that the wheeled mechanic is now more thoroughly trained; for example, he is now taught to remove and replace engines of the 1/4, 3/4 and 2 1/2 ton SMP trucks. He will need practise in this function, however, at the group 2 level. He has been given an additional week of training on automotive electricity. Because he is inexperienced, the subject of trouble shooting has been deleted and added to the group 3 training. He has received, nevertheless, some training in elementary fault finding during this basic part of the trade.

When the group 1 wheeled student is introduced to the challenge of this training he receives at least forty reference texts – (twenty of these books are stacked in the centre of photo A). He is also told that his business is to learn – otherwise he will be out of business! His progress is checked weekly, and if he is not passing the theoretical and practical tests he is given additional tuition; his week-end passes and sports afternoons are cancelled. Thus the low failure rate – less than 50 per cent.

By the way, the instructor and the course content are also checked. Each week the teacher's method is reviewed and also the subject's duration and suitability. Furthermore, the

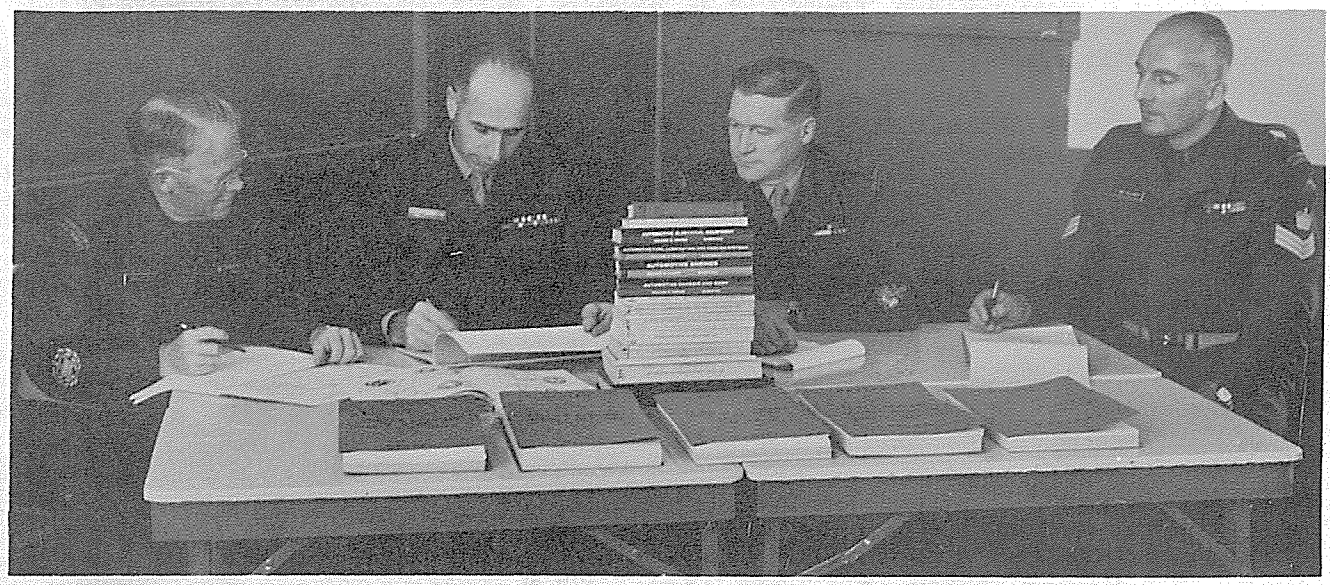


Photo A – The twenty texts in the centre of the group are some of those needed for group 1 wheeled training. The five course folders at the forefront contain the syllabi and lesson outlines for the master vehicle technician, vehicle mechanic tracked groups 1 and 3, and the wheeled groups 1 and 3 courses. From left to right, WO2 McLeod, Capt Cantlon, WO1 Guilfoyle and S sgt Elliott are reviewing the syllabi of the new courses. - Photos by the author

complete course is given a critique by the students. This is done by appointing a class senior at the start of the course, and coaching him on how to prepare and present the critique. Thus revisions and amendments are cultivated.

TRAINING AIDS

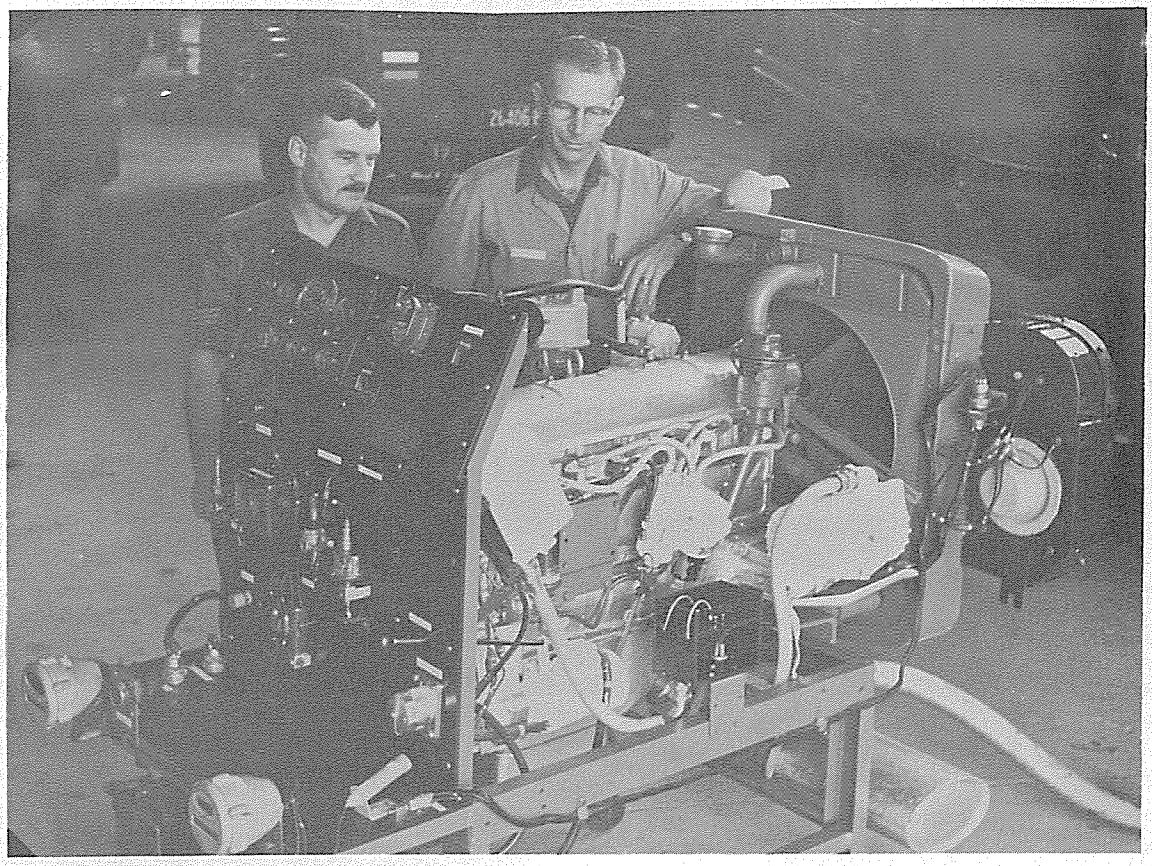
These revisions lead to the creation of new or better training aids. For instance, a 2 1/2 ton truck engine, photo B, was mounted on a frame complete with several assemblies so that the ignition, charging, starting and lighting circuits could easily be taught. As this model is fully operative it may readily be used during trouble shooting training. The Bendix ignition analyzer can be quickly connected to this aid to assist students on truck engines before they attempt ignition analysis on the more complex 12 cylinder Meteor engine. The Bendix ignition analyzer is shown with the 2 1/2 ton truck engine at photo C.

A more recent training aid is the air-over-hydraulic brake display board shown at photo D. This model, also fully operative, permits the student to quickly appreciate at one glance the entire braking system.

Another training aid is shown at photo E. This shadowboard assists the student to become workmanlike and helps him to learn the names of the various parts of the 2 1/2 ton truck engine. This engine was selected because it is the most complex of the three motors taught. During the disassembly and assembly of the motor he is shown the main points of wear and also those parts which will need adjustment or replacement.

CONTINUITY OF TRAINING

Continuity is provided by preparing lesson outlines for all lessons. These outlines



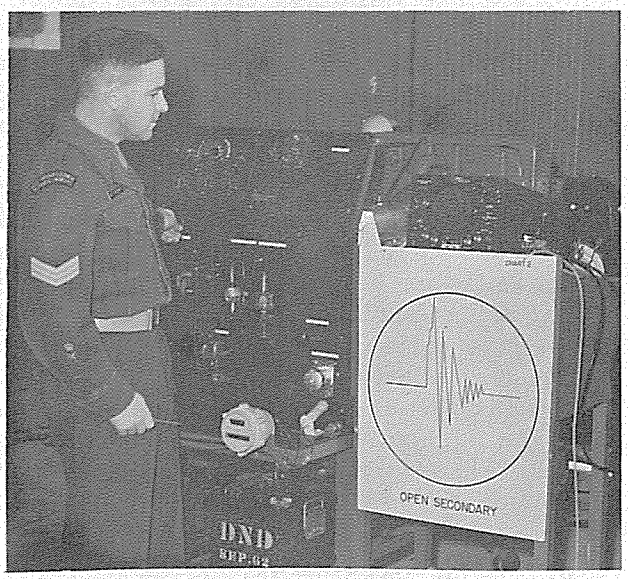


Photo B – A 2 1/2 ton SMP truck engine with operative starting, charging, ignition and lighting circuits fitted to a castor-mounted frame. From left to right: Sgt McPhee (now S sgt) and S sgt Funk who designed and built the training aid.

Photo C – Sgt EM Faulkner is shown preparing the Bendix ignition analyzer and 2 1/2 ton truck engine for a lesson on trouble shooting.

PEOPLE TOO?

The most efficient gears mesh quietly, producing little heat or friction.

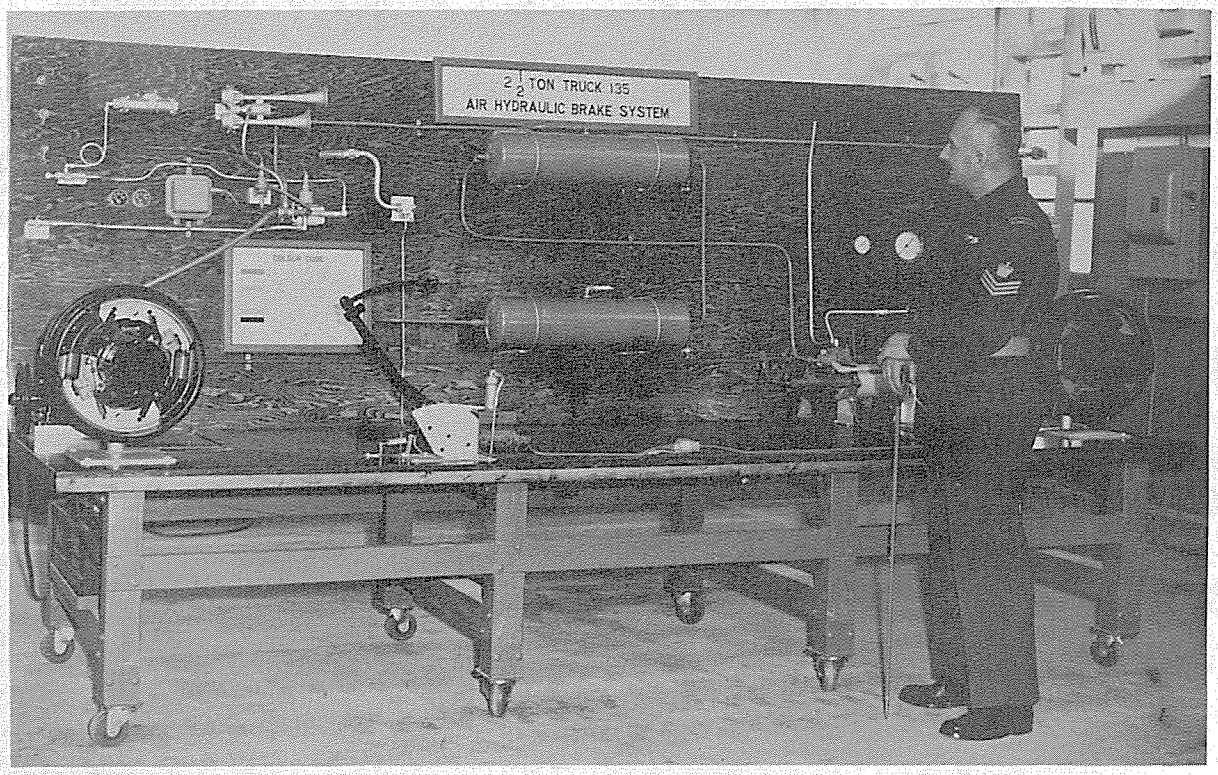


Photo D – This recently completed training aid has operative hydraulic, electrical and mechanical components of the 2 1/2 ton M135 truck braking system. S Sgt AC Elliott, master vehicle technician instructor, checks it over.

are grouped with the syllabus and trade specifications in course folders. Five of these folders may be seen at the front of the tables in photo A. The four gentlemen, nicknamed "The Brains Trust", review the lesson outlines, syllabus, examination questions, amendments and training aids needed for each course. Approximately 6000 lesson outlines and 9500 questions have now been completed. The lesson outlines are prepared by the instructor. These outlines serve their greatest value when a new instructor arrives at Vehicle Company. He is given the outlines related to the subject he is to teach – these he uses as a guide, and after he has 'sat in' on a few lessons given by an experienced instructor, his period of indoctrination has been so smooth that he is both confident and competent to carry out his part of the training.

INCENTIVES

To stimulate the students desire to learn, an award is presented to the leading student of each group 1 class – provided he has obtained an average of 80 per cent. This incentive has proven to be quite successful. In some classes competition has become so keen that the leading student has been chased into first place with a 90 average, closely followed by four other students with averages in the 80-90 bracket. The student selects his award from a display of timing lights, compression gauges, and sets of wrenches in a plate glass showcase at Vehicle Company. In addition he is given a photograph showing him receiving the award from the OC of the Company. Photo F depicts such a scene.

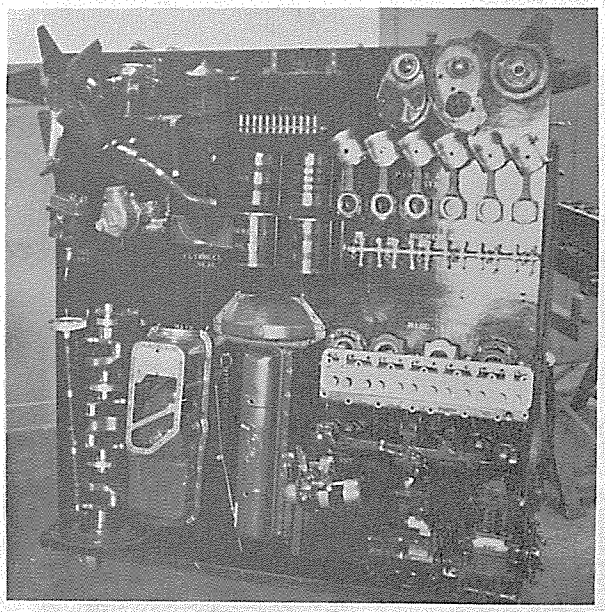


Photo E – Shadowboard designed and built by S sgt CB Townson assists students to become familiar and workmanlike with the parts of the 2 1/2 ton engine.

GROUP 2 TRAINING

While the group 1 training is hinged on the words 'must know', the group 2 level is based on 'must be able to carry out' as well as the 'must know' functions taught at the group 1 level. When he is certified proficient in the functions detailed in para 4. 4 of the trade specification, the tracked and the wheeled mechanics may write a trade test for group 2 qualification.

GROUP 3 TRAINING

The significant differences at the group 3 level are:

a. There are no tracked conversion courses for wheeled mechanics.

b. Both wheeled and tracked personnel must take a course to obtain the group 3 qualification.

The wheeled group 3 course is composed of additional subjects more complex than those taught at the group 1 and 2 level, eg, power brakes, power steering, heavy duty trucks, Bendix ignition analyzer, hydramatic transmission and, last but far from least, recovery. Trouble shooting is emphasized for a period of three weeks.

The tracked group 3 course includes the engineer equipment subjects, Ferret Scout Car, diesel fuel injection equipment repair, recovery of AFV casualties, Bendix ignition analyzer and trouble shooting. The course duration is 22 weeks for the tracked and 19 weeks for the wheeled course.

The advantage of having a course for both the wheeled and tracked mechanic is that both tradesmen will be receiving their group 3 qualification by the same method. This should be a more thorough one, when contrasted with the former method of a trade test for the wheeled man and a course for the tracked lad.

GROUP 4 ASSESSMENT

Next the challenge. Can he pass the group 4 assessment? Does he have the ability and the desire? Does he have your assistance? He needs it. Maybe he received the Pythagorean theorem, the binomial theorem and the binary system – maybe he has forgotten them or never really understood them. Maybe you too have forgotten them! But there it is – the carrot and the stick – group 4 pay and the prospect of promotion. He will try. After all he was told at the group 1 level that he was in business. He did not get past that group 3 course because of a low M score. So you helped him. He passed.

GROUP 4 TRAINING

The master vehicle technician syllabus is in three parts; Part 1, Tracked Vehicles; Part 2, Wheeled Vehicles and Part 3, Special Equipment and Procedures – each of 20 weeks duration. Wheeled mechanics will receive Parts 1 and 3 whereas tracked mechanics Parts 2 and 3. Thus the conversion takes place after the Group 4 assessment, whereas prior to Sep 63 conversion courses were run for a large number of group 3 wheeled mechanics.

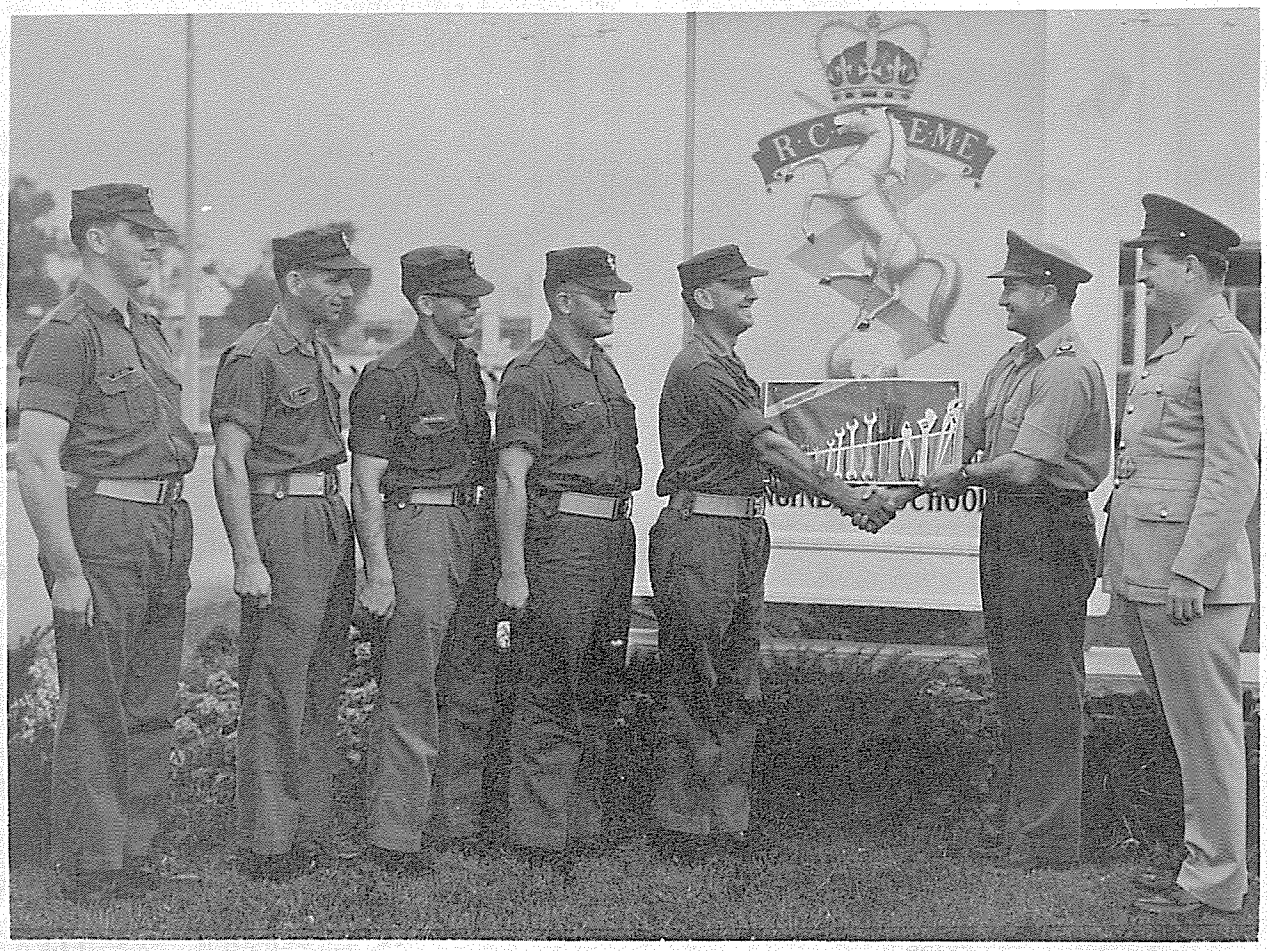


Photo F – From left to right: Cfn Moth, Coish, Gauthier, Adair (who all obtained 81 - 85 per cent) and Cfn Melin (91) receiving his award from Major DA Newman (now OC 5 Inf Wksp RCEME). Looking on is Major DJ Tremeer, British Army exchange officer, who arrived Sep 63 from ADEN.

Duplication of training at the group 4 level has been eliminated; likewise machining, welding, brazing, and blacksmithing have been deleted.

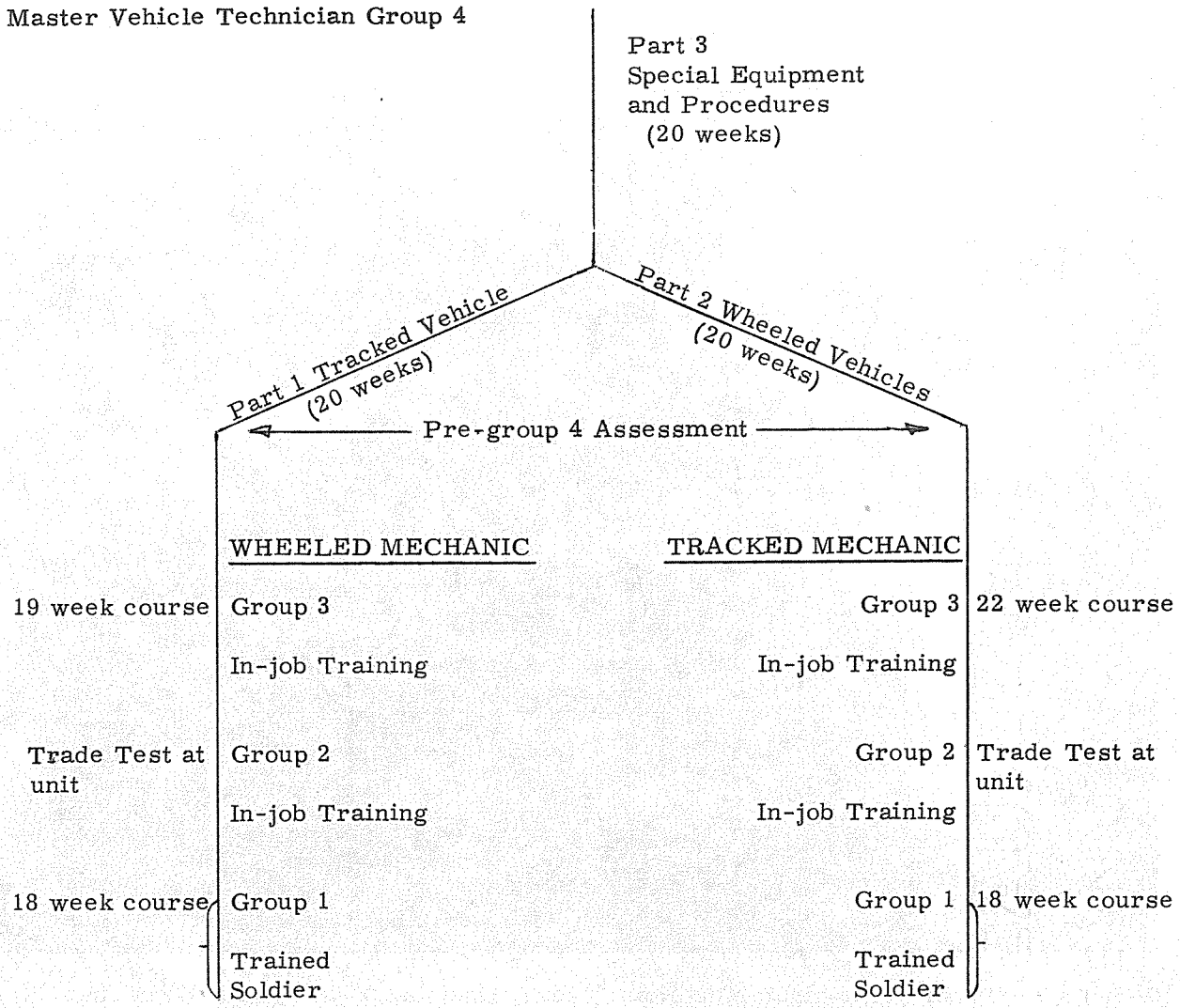
Some of the significant additions to the syllabus are the repair of the wrecker crane and winch of the medium wrecker (M62); the testing and adjusting of 25- and 60-ton tractor-trailer transporters; precision inspection of engine parts; fitting of main bearings, crankshafts, wet and dry cylinder sleeves and automotive repair expedients. Undoubtedly the finest group 4 syllabus ever produced.

PROGRESSION IN THE TRADE

The following chart may give you a clear idea of how progression in the trade should occur.

IMPLEMENTATION OF NEW TRADES TRAINING

Group 1 mechanics trained on the former trade specification will be writing trade tests based on the new specifications. Group 3 and 4 personnel will be coaching the group 1 men to pass these tests. Therefore the group 3 and



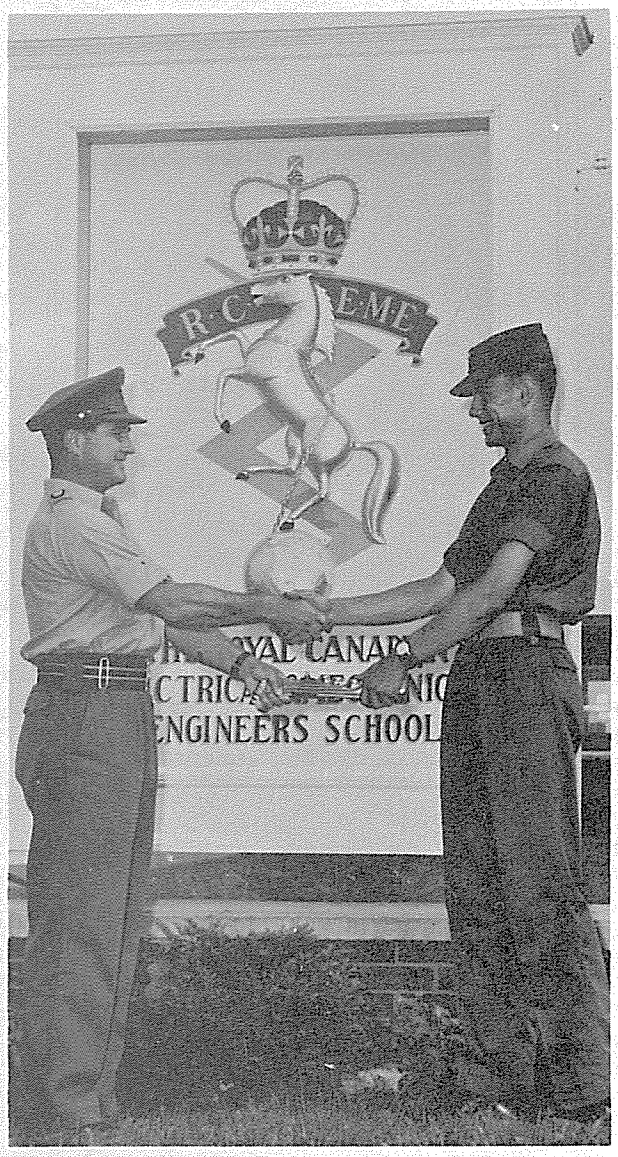
4 personnel must refresh their training if they are to correctly assist the group 1 tradesmen.

Group 2 mechanics – both wheeled and tracked – will need to know para 4.5.1 to 4.5.5 of the new trade specifications before qualifying for a group 3 course.

There may be a bottleneck in conducting sufficient group 3 courses because of the large number of group 1 men trained in the year 1962-63. They may not all qualify, however, in a higher group because the new trade tests have considerable variety in their new form.

The Group 4 courses will be 'custom built' for the next few years, or until 12 group 3 men of the tracked or the wheeled trade can all pass the assessment at the same time, thus providing sufficient candidates with similar qualifications to make up one course.

You may have some suggestions to improve this training program. Please forward such thoughts. Another five years of revision and amendments may result in an improved trade specification, a better trained technician and a more efficient corps!



Cfn DJ Stevenson of 14 Coy RCEME Camp Borden receiving an achievement award from Major DA Newman. Cfn Stevenson achieved an average of over 80 per cent.

The man who has ceased to learn ought not to be allowed to wander around loose in these dangerous days.
-Dr. M.M. Coady, noted Canadian educationist.

WINNIPEG GARRISON BOWLING TOURNAMENT

Bowlers from No 213 Workshops at Fort Osborne Barracks last week-end took home all the marbles in a triple-header tourney to decide Army five-pin titles in team, doubles and singles events. About 50 bowlers took part in the trundling marathon held at Lipsett Hall.

The pins were on friendly terms with Tom Howell, a machinist with the workshop, who gathered in the singles crown with an 808 triple, then teamed up with running mate Bob Arbeau to snatch the doubles title. The twosome registered a 1432 count highlighted by a single string of 569.

In addition, Howell put together a 794 triple to lead the Workshop's 'B' squad victory in the team event. His nine-game total for the day was 2310 pins for a 256 average, topped by a 311 game.

Other bowlers on the winning team, which racked up a 3401 figure for the three games were Jean Mathieu, 793; Bob Arbeau, 659; Barry Johnson, 765; Ray Lemieux, 821.

Second place in all events also went to 213 Workshop entries. The unit's 'A' squad finished 103 pins off the pace with 3298 to edge the Garrison Headquarters Sergeants' Mess team by 80 pins.

Top game in the tourney was put together by Frank Rice who registered a 370 during the team competition to keep his squad in the running.

Jim and Audrey Peters, a husband-wife combination, got together for a 569 score in their final game of the doubles to take second place with a 1388 string.

They edged a distaff entry of Gill Lalonde and Vivian Earl who piled up 1321 to sneak by the headquarters duo of Lou Nodelman and Moe Gosselin who finished in fourth spot with 1246.

Marty Staines clicked for the top in the singles event to snare second place. His final game, a 328, bumped his total to 771 – good enough to get him by Ray Lemieux' 726 and Lou Nodelman, who registered an even 700 for the triple.

SUGGESTION AWARD

SHIFTER LINKAGE 5TON DUMP TRUCKS

Mr GW Truedell, 207 Workshop RCEME, developed a modification to the shifter linkage of 5-ton dump truck F800, to allow a more positive and smoother engagement of the auxiliary transmission into gear when engaging the front axle.

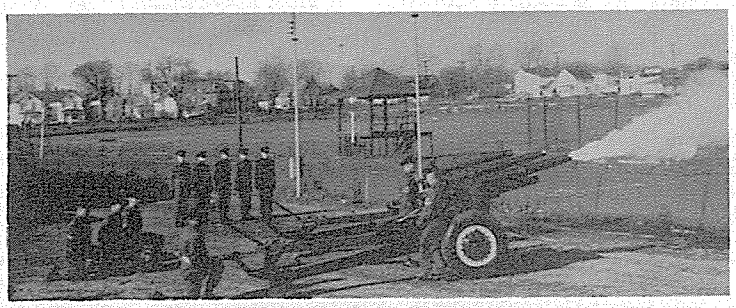
This modification was evaluated by the Directorate of Electrical and Mechanical Engineering at Army Headquarters. It was considered that the suggestion was complete in all aspects and overcame the design deficiency in the original shift linkage. Besides providing considerable financial savings the modification permits less driver fatigue and the vehicle will have less down time. It was implemented by EME Manual Vehicles F 577, Instr 2, vide DEME memorandum HQ-S-ND-9411 TD 2277 (ME 7A2) dated 27 Jun 1963.

Brig JS Ross, DSO, CD presenting Mr Truedell with award certificate and cheque for $530. Capt E MacMillan CD, 207 Workshop, attended the presentation.

-National Defence photo

The net savings of $15,870 are based on the cost of material and labour to maintain each vehicle prior to modification, less the cost of labour and material in modifying. There are a total of 23 army vehicles being adapted to the proposed new shifter linkage. The previous to modification repair costs quoted are based on recent repairs to approximately 10 vehicles. It is not applicable to the other services as no motor vehicles of this type are held by Navy or Air Force.

RCEME VERSATILITY



See the RCEME Technical Bulletin for October 1963, page 34:
"At the 11 November Civic Memorial Service in Kingston in 1962, two 105 mm howitzers with RCEME gun crews fired the salute..."

Music for Mechanics

By Lt-Col PR MacIver, A.M.I.Mech.E., A.R.Ae.S., A.M.B.I.M., REME

This article is compiled from reminiscences of those who created the REME March which, as you should know, is also the RCEME March.

Have you ever pondered on the origin of our Corps march?

Those who forged the chain of events that led to the REME March as we now know it are all here to tell the tale except, unfortunately, our first Director of Music, Captain Plater (1), who died in harness in May, 1952. We take for granted our right to have a Corps march, but it was not always so. In the words of General Rowcroft (2), our first DME:

"The REME had originally, of course, neither band nor march and I set out to get both immediately the Corps was officially brought into being on October 1st 1942. The formation of the band is another story, of which the hero is Brigadier Buttenshaw (3), and the villain the Adjutant-General of the day who 'co-operated' with a written minute stating that 'Mechanics need no music'!"

"One of the attributes indispensable in the new Corps was a fighting outlook, and I cast round for an old-time march based on an aggressive period and mood. I did not want either a new and unfamiliar tune or anything based on one (or a combination) of the regimental marches of our parent Corps, RE, RASC, and RAOC, though there was a considerable support for the adoption of 'The Village Blacksmith' of the Ordnance Corps."

"I regarded 'Lillibullero' as a rollicking, aggressive tune. No regiment or corps had it as their own march, I believe. The only trouble was that it was terribly short and, by itself, would involve too much repetition on a big parade."

The spirit of 'Lillibullero' appealed to many of us who listened to its strains introducing the BBC News in those wartime days, and the story is taken up by General Valon (4):

"Early in 1943, in the course of my travels as Inspector of the REME, I was sitting one evening in the lounge of a provincial hotel when the radio was switched on for the news. And this – the news – was preceded by a rousing march which at once drew my attention, and which I remembered to be called 'Lillibullero'. The idea then occurred to me – why not combine, as the Corps march of REME, 'Lillibullero' and the Dwarfs' Song, 'Heigh-ho*, heigh-ho, its off to work we go ...' from the film 'Snow White and the Seven Dwarfs': the former to signify the fighting and the latter the

* See Editor's note following this story.

(1) Captain DG Plater, M.B.E.
(2) Major-General Sir Bertram Rowcroft, K.B.E., C.B.
(3) Brigadier AS Buttenshaw, D.S.O.
(4) Major-General AR Valon, C.B., O.B.E., M.C.

working activities of the Corps? So I mentioned the idea to Major-General Rowcroft, the DME, for his consideration."

Like all good ideas, this one required someone to execute it. The task fell to the Bandmaster of the Army Apprentices School at Arborfield, now Major Cyril Nel. His band, formed of boys under training, together with members of the 4th/7th Royal Dragoon Guards who were unfit for war or under age, plus some of the school staff who were instrumentalists, gave much help to REME (as does the present school band). Brigadier Buttenshaw, who was Commandant Training Establishment REME in those days, had been talking to the Bandmaster about the problem of composing a REME March when, to quote Nel's words:

"I received a letter from General Rowcroft who was DME at the War Office. He said that he wished me to write a march based on four bars of 'Lillibullero' and four bars of 'Heigh-ho', with both tunes played together in the grandioso. The music was to signify the Corps going into battle with their tool kits at the ready. I went across to see Brigadier Buttenshaw concerning the march, but he was away and so I was shown in to Colonel Tyler's (5) office. I showed him the letter from General Rowcroft and explained that the correct procedure was to contact the Royal Military School of Music, then at Churchill House, Aldershot. They would advise all Bandmasters that a march was required for the new Corps of REME. I also explained that the DME had set me a very awkward task in combining six-eight and two-four rhythms. Colonel Tyler very sympathetically replied that the General, the Brigadier and he were quite aware of the good work I had done whilst at Arborfield, and that they were quite confident that I would overcome any difficulties that might arise. Eventually I persuaded them to publish throughout the new Corps a request for a suitable march. A few proposals were received and passed to me and these I arranged for the band, together with the 'Lillibullero–Heigh-ho' opus which I finally wrote with a free counterpoint over 'Heigh-ho' that was very like 'Lillibullero'."

"Came the day when the DME and several very senior officers assembled at the Apprentices School to hear the several efforts. All the marches had been thoroughly rehearsed so that there would be no question of one march sounding better than another through indifferent performance."

Of this occasion General Tyler says:

"I very clearly remember the try-out of marches on the parade ground at the Boys' School. Senior REME officers who were present included Rowcroft, Valon, Buttenshaw, Bullard (6) (just returned from Middle East) and myself. As far as I remember, the 'Lillibullero–Heigh-ho' combination was unanimously agreed as the best of those played."

The new march was sent for vetting to the Royal Military School of Music and, in the words of Major Nel:

"Harmonically and instrumentally the march was satisfactory, but the Director of Music said that an introduction was needed and that I should produce one by next morning. This was effected without any loss of sleep and the whole march was then ready for publication. A copyright problem arose because, although 'Lillibullero' is traditional, 'Heigh-ho' was thought to be composed by Irvin Berlin for Walt Disney, so permission should be obtained before the march could be published. A cable seeking the necessary permission was sent to America and back came a reply suggesting that contact with Chappel & Co, the music publishers in Bond Street, would probably reveal the author's name and obtain his consent. This was eventually smoothed out, and the next step was publication. Chappell & Co published 'Snow White and the Seven Dwarfs', so they were approached regarding publication of the march. They were

(5) Major-General Sir Leslie Tyler, K.B.E., C.B.
(6) Major-General C Bullard, C.B., C.B.E.

not keen to help owing to the wartime shortage of paper. However, steps were taken by the appropriate branch of War Office, and the march was eventually published."

At a Corps Guest Night in the Officers' Mess of Hazebrouck Barracks early in 1944, Bandmaster Nel and a section from the Army Apprentices School were playing during dinner. According to his recollections:

"At the conclusion of the dinner the DME followed by the officers, adjourned to the anteroom where portraits of the King and Queen were to be unveiled (using a mechanism which Brigadier Buttenshaw remembers as a masterpiece of ingenuity). So many officers were present that they overflowed from the anteroom to the hall, where we were playing. As the pictures were unveiled my orchestra played the National Anthem. This was followed immediately by the new march. At the finish one Captain who was almost standing on my toes said 'Who composed that?!!' In the deathly hush that followed I replied 'I did'. After what seemed a lifetime, a young subaltern shattered the silence by saying 'Jolly good march, what!' With tact like that, I hope that he is now at least a Colonel."

Many of us who marched to the original 'Lillibullero–Heigh-ho' tune remember the difficulties in holding tne step during the change of time, and Major Nel describes it well with reference to an Arborfield parade:

"My boys' band, at eighty-strong, played for the march past. Those who remember the march will recall that it commences with 'Lillibullero' followed by a drum phrase which was inserted to enable the marchers to go from six-eight tempo to the two-four of 'Heigh-ho', which followed. This introductory four bars of drum was very effective with my band, for I had eight very solid side drummers. Unfortunately when it was played by other bands the drummers, who, during that period of war, were often from dance bands, had very little idea of a strong marching rhythm."

(7) Major-General SW Joslin, C.B., C.B.E.

These troubles are confirmed by the memories of General Rowcroft:

"In practice, 'Heigh-ho' was found to be very difficult to integrate with 'Lillibullero' without disturbing the tempo and rhythm of the combined tune, so that marching tended to become ragged at the moment of change which might easily be, for some, the moment of passing the saluting base on a ceremonial parade."

"In General Joslin's (7) time as DME (and I believe at his suggestion) 'Heigh-ho' was dropped and the old French tune of 'Aupres de ma Blonde' was substituted. This seemed to tie in much better with 'Lillibullero' and, of course, still holds the field."

It was early in 1950 that Captain Plater, as Director of Music, was requested to explore the possibility of finding another Corps March. He produced some half-dozen probables, including that which used 'Lillibullero' as its first theme combined with a trio based on 'Aupres de ma Blonde'. The latter tune had no connection with the Corps but was considered a good marching tune and was unadopted at the time. General Bullard emphasises the great interest which was aroused when the news got around that the Corps march might be changed.

"Many, myself included, were for a completely new march", he records, "Whilst the traditionalists were for no change at all. Captain Plater took a great interest in suggestions which were put to him and, when considering my own suggestion, actually took a lot of personal trouble in scoring it himself for the band. This was a combination of the melody in the last movement of Beethoven's Emperor Concerto, and the last movement of his Violin Concerto in D. These made a splendid march, but did not win the day."

After hearing all the probables in October, 1951, a committee of senior officers, which included the DME, General Joslin, decided that Captain Plater's new arrangement

would be most suitable, and the march was published early in 1952 shortly before he died – to be succeeded by Captain O Birkin (8).

There were still complaints that it was difficult to hold a marching step through the change of themes, even in the new march, and it was found that they were directed against a two-bar phrase which bridged the gap. Captain Birkin suggested an amendment and, in 1959, the Corps Committee called for a world-wide census of REME opinion; the unamended and amended versions were to be played on and off parade as often as could be arranged, as well as the considered alternatives: "Colonel Bogey", "The Great Little Army.", "Away to the Mountain Brow", "High School Cadets", "On the Quarter Deck" and "The March of the King's Men". The popularity of the "Lillibullero–Aupres de ma Blonde" combination was strongly confirmed in the answers that came in and it was generally agreed that cutting two bars had eliminated the outstanding difficulty.

Which all goes to show that, despite early W.O. views on music for mechanics, tunes for technicians must be right; and that the Corps is prepared to take as much trouble over detail in a matter like this as in all its activities.

(8) Captain O Birkin, M.B.E.

(Editor's Note) When editing this story from the Journal of the Royal Electrical and Mechanical Engineers we found a rather simple discrepancy in the songs used in the original arrangement of our march.

RCEME said, in "Notes for RCEME Officers" page 14: "... excerpts from Lillibulero and Whistle While You Work...". REME said: "... combine, as the Corps march of REME, Lillibulero and the Dwarfs' song, 'Heigh-ho, Heigh-ho, It's off to Work We Go'".

Both songs being from Walt Disney's Snow White and the Seven Dwarfs", it was an easy error to make. Further research revealed that REME was right; we had been given the wrong information.

So, to keep the record straight, amend your copy of "Notes for RCEME Officers" to read "Heigh-ho" instead of "Whistle While You Work". In these days of piped-in music and transistor pocket radios, whistling while you work is out of style, anyway.

ADDITIONAL RADIATION SAFETY OFFICERS with date of qualification:

Capt	JE	Brewster	-	Apr 58
S sgt	DA	Ross	-	Nov 58
S sgt	J	Thorne	-	Nov 58
S sgt	RK	Watson	-	Mar 55
L/sgt	M	Nowski	-	Nov 61

The challenge of leadership is before you: to sustain the essential human character of the Army, to infuse its ranks with a sense of dedication to the country, to support the combat soldier in all you say and do, and to give him such an exultant pride in his calling that it will be enough for him to say: "I am a soldier." -- From an address by the Hon. Cyrus R. Vance, Secretary of the U.S. Army, at the Founders' Day meeting of the West Point Society.

It seems to be considered that leadership descends on men like dew from heaven; it does not ... Leadership is based on truth and character. -- Montgomery in "The Path of Leadership".

When 1 Canadian Guards returned from Europe, Lt Col WG Hamilton, Command EME Cencom, noticed that establishment returns showed an unusually large percentage of RCEME tradesmen wishing to remain with the unit. The Command EME wondered why, and asked the Commanding Officer of the Guards, Lt Col HW Mulherin, if he knew the answer. Here it is.

SOME POINTS ON A HAPPY RELATIONSHIP

On the rotation of 1 Cdn Gds from Europe, most of the unit RCEME personnel – the majority having been with the battalion since it had proceeded to Germany – expressed the desire to be allowed to remain with the unit in its new station at Camp Picton rather than be posted to other employment. It would appear that this has not generally been the situation with attached tradesmen. At the request of the Central Command EME this matter was looked into by the unit. All attached RCEME personnel were interviewed as well as those persons who had a hand in the directing of their employment.

The interviews did disclose the reasons why the attached RCEME tradesmen were quite content to remain with the unit. It must be stated, however, that nothing of a startling nature was revealed. All of the points mentioned could be traceable to nothing more than the application, and application is probably the key word, of normal common sense rules of man management. Some of the more important points mentioned are noted in the following paragraphs.

Two points which were of help to the unit in having RCEME personnel elect to stay with it in Camp Picton were attributable to factors outside the unit's control. Most of the unit RCEME personnel called Ontario home and Camp Picton seemed as good a place as any. All were also suitable for employment in a field unit and could expect as a next posting that it, too, would be a field unit. Although the grass may always look greener in some other pasture, all expressed the opinion that it was silly to ask for any place else when they were quite satisfied with their present unit.

When interviewed, each of the RCEME personnel said that on hearing of his posting to this particular battalion of this particular regiment, he approached the job with a certain amount of trepidation. It might be said that anyone in this frame of mind who does eventually find that the persons with whom he is to work are no different than any others, has a good start in being satisfied with his posting, even if it is only a feeling of relief. Be this as it may, the unit does employ certain very definite policies which go a long way in providing an atmosphere of inter-Corps harmony.

Corps personnel attached to the unit do not usually parade with the battalion on its normal parades, nor do they carry out duties of a unit nature. It is a unit policy that as little interference as possible is placed in the way of Corps personnel that would impede in any way their carrying out the tasks for which they are attached to the unit.

The unit has very definite standards of dress and deportment. These are laid down in written orders in a very specific manner. They apply to attached Corps as well as to members of the Regiment. By virtue of the fact that these apply to all, no matter what their Corps, there is a tendency for Corps personnel to feel a close affinity to their infantryman counterpart when all are treated as equals in these fields.

Attached Corps personnel who would, under operations and exercise, work with a sub-unit of the battalion are allocated on a permanent basis, although all work under central direction during times in garrison. This has proved to be a very important factor in getting Corps personnel to acquire the feeling of belonging, as well as helping to break down any inter-Corps friction. It is indeed difficult to harbour inter-Corps rivalries when the contact is on such an intimate level.

The unit watches over its NCO suitability and promotion policy through the medium of a

(See HAPPY RELATIONS next page)

Technical Notes

VEHICLES (See also page 41)

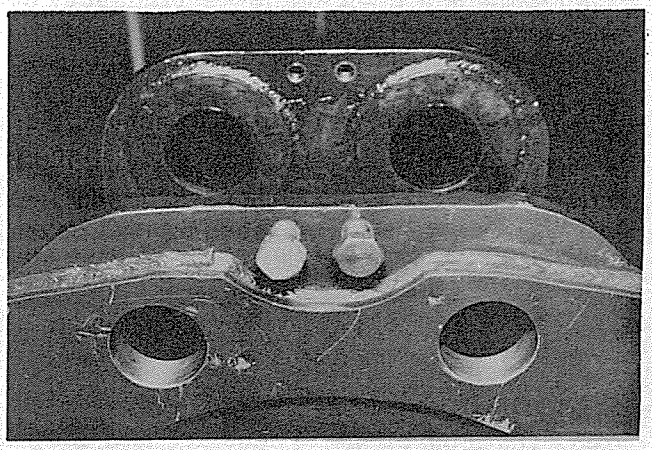
Repair of Road Wheel Brackets

Three Centurion tanks being rebuilt at 202 Base Workshop appear to have had improper field repairs carried out on road wheel brackets.

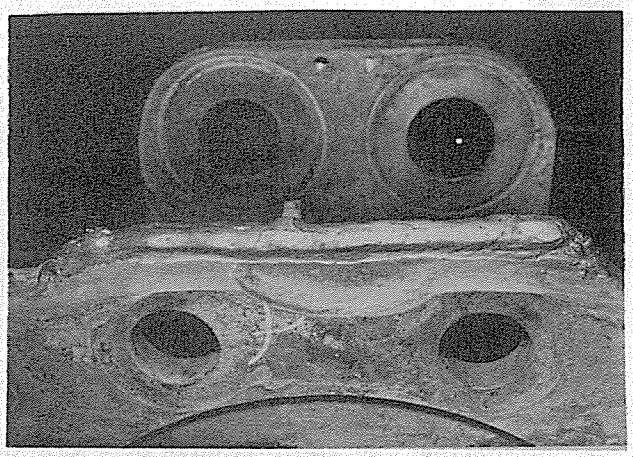
The repair involves the building up of the inside bottom surface of the bracket with a stainless steel weld. But in doing this the field unit has also welded the end-cover retaining screws to the bracket.

As a result, when rebuilding these tanks many manhours are required simply removing the brackets from the hull and the screws from the bracket. It creates an 80 per cent replacement where it normally is 10 per cent.

Excessive building up should be avoided. If wear has extended to the bolt holes, these should be drilled out and retapped after the build-up is completed.



New Wheel Brackets



Brackets After Building up

(TECHNICAL NOTES continued next page)

HAPPY RELATIONS

Selection Board which reports to the Commanding Officer. All attached personnel come under the Board's scrutiny the same as any infantryman. There is no chance under this system of any Corps tradesman being shelved or missed for a career or other type of course. It is unit policy that attached Corps personnel attend Regimental Jr NCO courses if possible so that they may feel a still closer relation to the unit in which they are serving. It is also unit policy that nothing which the unit is doing will hold a man from being sent on a career course. This policy also applies to all attached personnel.

All of these points have been honestly adhered to to the best of the unit's ability. As has been said, there is certainly nothing startling about any of them, but by trying its best the unit has found the results to be most gratifying.

If any one point could be chosen as more important than the others, it is the one relating to the freedom of attached Corps personnel to work at the job for which they were attached to the unit with the minimum of interference. This point came up in the discussion with every RCEME person interviewed. Each expressed the feeling that the unit appreciated him as an expert in his field and had made no attempt to waste his time trying in a half-hearted manner to make him into a pseudo-infantryman. For his part, each expressed the opinion that because he was appreciated for what he was, an expert in his trade, he was duty-bound to do all in his power to see that the unit was given his best.

It can honestly be said that the unit has yet to be let down by any member of the Royal Canadian Electrical and Mechanical Engineers.

The following three pages consist of General Motors Bulletins which are reprinted herein for general information rather than being distributed as parts of the EME Manual.

FLAT WASHER ADDED TO STARTING MOTOR BOLT TO PREVENT BOTTOMING
Sedan 1964 Series 1000 Equipped With Six-Cylinder Engine

Commencing with vehicle identification #41569009336, a flat washer was added to the outboard starting motor-to-engine attaching bolt. This change was made to prevent bottoming of the bolt before the bolt is tight, which has occurred in a few instances.

It is therefore recommended that the bolt be checked on vehicles built prior to the above vehicle identification number, at the time of performing the New Car Inspection or whenever a vehicle is in the Dealer's Shop for service. If the bolt is not tight against the starting motor, install one 3/32 inch thick flat washer on the bolt.

INCORRECT NUMBER OF STEERING GEAR BALLS FOR STANDARD STEERING SHOWN IN THE 1961 MAINTENANCE MANUAL Sedan 1961-62-63-64 Series 1000 Equipped With Standard Steering

(This item is being issued to revise the previous information issued on Page 59 in the 1961 Product Service Bulletin, this Section.)

The number of balls used in the steering gear on the above models is shown in the 1961 Maintenance Manual as 54 (27 in each circuit). This number is correct for the steering gear used with power steering; however, the standard steering gear uses only 50 balls (25 in each circuit). This is due to the difference in the standard and power steering gear ratios.

On Page 4-18, column one, the last sentence in the "NOTE under item two should be changed to read as follows: "It may be necessary to work the worm back and forth, holding the balls down first in one hole then the other, to permit the correct number of balls to be installed in each circuit." The statement "to close up the spaces between the balls and fill the circuit completely", is INCORRECT.

The Parts Catalogue shows the quantity required as 60 balls. This also is INCORRECT and will be revised to show the quantity "as required (AR)".

All Dealers' copies of the above Manual should be revised to make sure the correct number of balls are installed when overhauling the steering gear.

REVISED DESIGN DELCOTRON ROTOR SHAFTS - All 1D Series Delcotrons

A design change has been made to Delcotron rotors, part #1956963, #1961697, #1959686 and #1962559, to incorporate a shoulder on the shaft and a new hardened front bearing spacer, part #1963139, as shown in Fig 2 below.

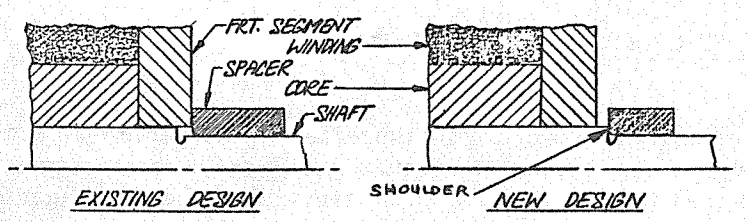


Figure 2

This change is to eliminate warpage of the rotor shaft caused by torquing the pulley nut, bearing, and bearing spacer against the rotor segment where the segment is not square to the rotor shaft. Such warpage results in roughness or boom and is often blamed on bad bearings.

Conditions of Delcotron roughness or boom should be analyzed as follows:

a. With belt removed, manually spin the rotor, noting any roughness or tendency to drag.

b. Loosen the pulley attaching nut and again spin the rotor manually. If the rotor now spins freely and smoothly, the rotor shaft was warped under pulley nut torque.

If it is determined that this condition exists, it will be necessary to replace the rotor assembly.

Parts Information

The revised design rotors can be identified only by visual inspection as shown in Fig 2.

In order to use the revised design rotor to replace the former design, it is necessary to discard the original front bearing spacer and replace it with a new hardened spacer, part #1963139.

Note: Some early rotor packages of the revised design may not include the hardened spacer. If such a rotor is obtained, it will be necessary to obtain the spacer separately under part #1963139. Later packages will include the new spacer with the rotor.

The contents of this item are being sent to all Delco-Remy Distributors.

LUBRICATION OF FRONT SUSPENSION BALL JOINTS - All 1963-64 Passenger Cars and Light Duty Trucks

In extremely cold temperatures, zero or below, vehicles must be permitted to warm up at least a positive 10 degrees fahrenheit before lubricating the front suspension ball joints. Below this temperature, the viscosity of the grease is too great and the rubber is too stiff to permit purging; and the seals will balloon. In addition, cold grease does not sufficiently cleanse, since it takes the path of least resistance.

If the seal balloons, it may rupture immediately. Even if the seal balloons without immediate rupture, a hole may be worn in the seal as a result of rubbing adjacent parts due to its enlarged size.

Seals can also be damaged, or blown, by the use of high pressure lubrication equipment. It is, therefore, recommended that ball joints and steering linkage be lubricated with a hand gun.

All Dealer Service personnel using lubrication equipment should be made aware of the above information to prevent seal damage.

IN VEHICLE BATTERY CHARGING – All Models

It has been common practice when charging batteries in the vehicle to leave the battery cables attached to the battery. It is recommended that this practice be discontinued and that whenever a battery is to be charged in the vehicle both battery cables be disconnected from the battery.

This recommendation is based on the following reasons:

a. Applied voltages when charging can rise sufficiently to damage any electrical systems accidentally left energized when commencing the charging procedure. This applies particularly to voltage sensitive components such as lights, radios, and other diode and transistor operated devices.

b. Removal of the battery cables will help to insure cleaning of the battery posts and cable clamps which may assist in preventing further battery discharge due to poor starting, poor charging due to high resistance, etc.

Caution: When removing battery cables always remove the ground cable first to prevent arcing in the event the wrench should slip and contact the grounded sheet metal.

POOR ENGINE PERFORMANCE DURING WARM-UP – 1963-64 Series Sedan and Light Trucks Equipped with 230 Engine

Poor engine performance during the warm-up period may be due to partially obstructed carburetor heat passages in the intake manifold. This could result in insufficient heat to the carburetor base even with a normally operating heat valve. This was corrected in Production commencing with 1964 230 cubic inch engine #80-4-117713 and on the 194 cubic inch engine at #92414509. If this condition is encountered, the carburetor choke adjustments and ignition timing should be checked, corrected to specification and the vehicle road-tested.

Should slow warm-up still be encountered, the exhaust and intake manifolds should be removed and disassembled to permit access to the underside of the intake manifold. Examine the two heating passages, shown in Fig 11, and if these passages are partially or completely obstructed, they should be drilled out with a 3/8 inch drill to a depth of 1 1/2 inch, as shown in Fig 12.

Note: Do not exceed the 1 1/2 inch depth.

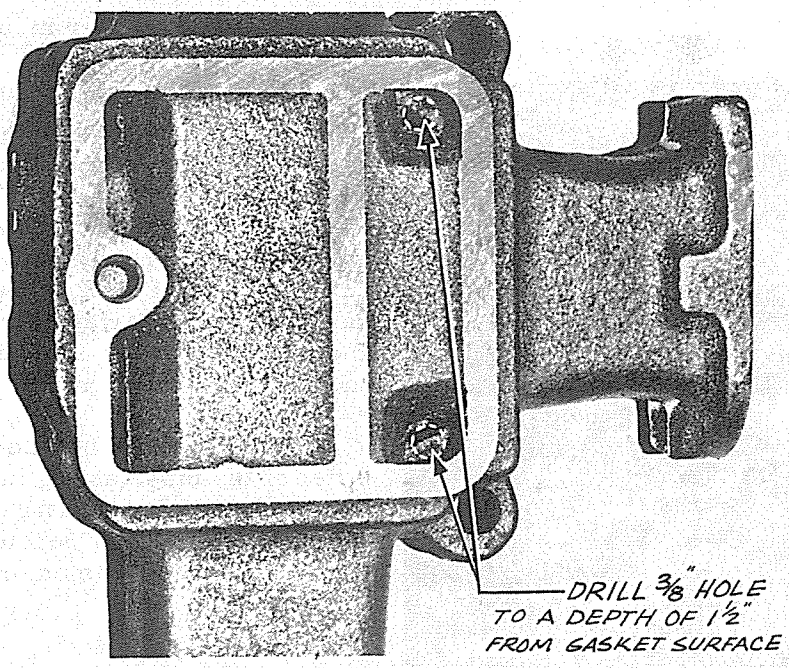


Fig. 11.

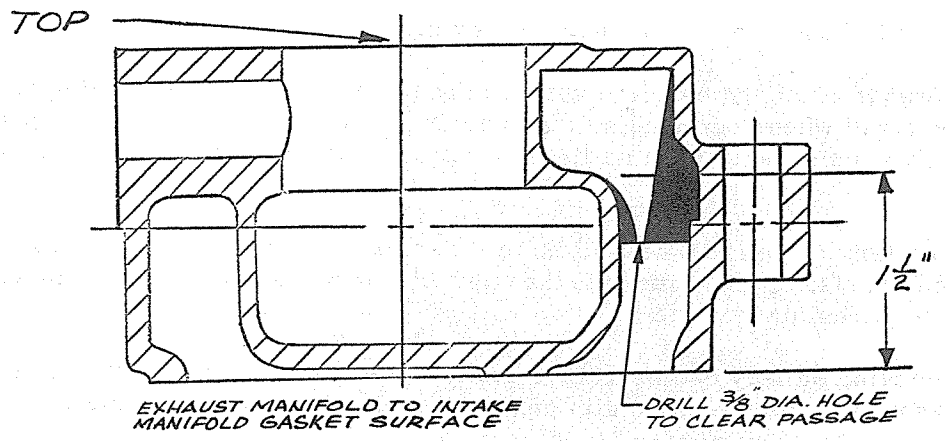
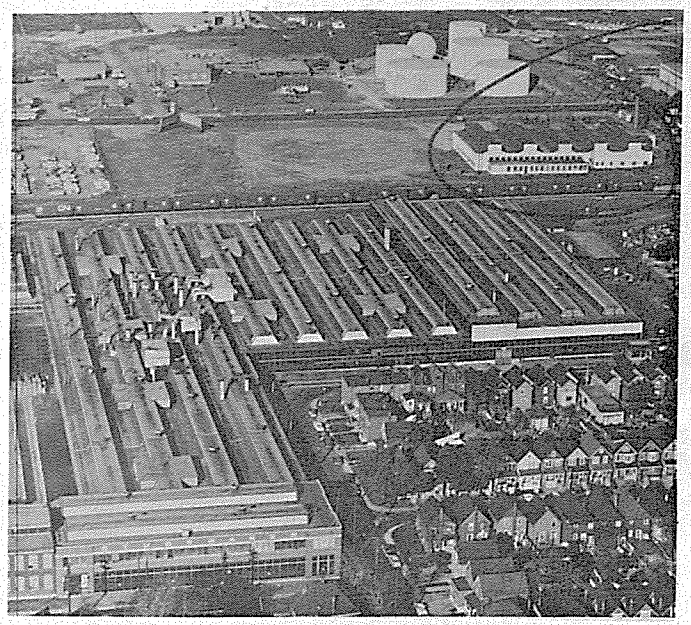


Fig. 12.

LETTERS TO THE BULLETIN

To the Editor:

The picture below appeared in the Kingston Whig-Standard, along with an article concerning the move of Studebaker Production from South Bend, USA, to Hamilton, Ontario.



I found the picture of interest in that in the upper right-hand corner of the picture, between the storage tanks and the railway lines, is a building which happens to be Burlington Street Armouries, the home of 5 Tech Regt RCEME(M). Possibly Studebaker's expansion will mean that 5 Tech Regt may have to find other accommodation.

For the younger members of the Corps, this may help to explain why we older types eulogize Service life. Through moving about in the Service, many scenes and landmarks appearing in the newspapers and magazines are recognized. It is normal for each such recognition to bring back memories connected with such places and people with whom we have come in contact. The sight of Burlington Armouries in this picture certainly reminds me of many pleasant occasions shared with the members of the units housed in that building.

It is such recognitions that evoke memories of the most lasting interest and which are in the end, the sharing of experiences with others. To myself, Service life has provided me with many such memories.

WE Ellis
Major

No Routine Maintenance

When a worker becomes thoroughly familiar with his job, regardless of its complexity and significance, he may tend to lose some of the caution and precision with which he first approached it. Hence, the experienced maintenance man, good at his job and almost always right, may tend to rely too much on his memory instead of using EOs, check lists, and other aids. Or he may, because it has become fairly routine, try to do a job too quickly to give it the full attention it deserves. He can thus slip up on an important detail and inadvertently become the major factor in an accident.

Keeping unintentional neglect due to familiarity out of the workshop is an important job of the maintenance supervisor. From his overall vantage point he should be able to see when laxness may be creeping in and so take action to eliminate it. He must insist that all personnel – regardless of experience – use current EOs and handbooks, particularly when the job is important and involves a variety of complicated actions. If his men lack the type or degree of qualification required to turn out a tip-top maintenance job, he should arrange for appropriate training.

Maintenance is intended to preserve; don't let it contribute to accidents instead.

-TIG "Briefs"

COMMON CORROSION
in aircraft structures

If it is accepted that we are obliged to use metals in the construction of aircraft and supporting equipment, then we must also accept the very real probability of corrosion attacking the metals used. It is therefore important that those of us who are concerned in operating aircraft must be able to recognize corrosion and be aware of the elements which are responsible for the onset, growth and acceleration of corrosion.

To a greater or lesser degree most metals corrode. The speed at which they corrode depends on the conditions they are subjected to and the length of time these conditions are permitted to sustain their attack. In this article it is only intended to give an insight into the effects of corrosion on aluminium and aluminium alloys together with the remedial action necessary.

TYPES OF CORROSION

When aluminium is exposed to the atmosphere a thin transparent film of aluminium oxide forms on the surface as corrosion worsens; this film is evidenced by the presence of a grey powdery substance called aluminium hydroxide.

Fog, rain and high humidity will increase the rate of corrosion but it is still slow. Salt air will quicken the formation of corrosion while direct contact with salt water will result in rapid formation and adverse effects. This type of corrosion blotches the surface of the metal which gets progressively worse as deterioration increases and the metal may finally be weakened to its failure point. Hence there is a real danger to aircraft operating from coastal areas or flying low over the sea. The danger is also present on airfields where runway snow clearance has been aided by sand and salt.

Atmospheric corrosion or surface corrosion left unchecked can develop into intergranular corrosion, which is much more serious as it attacks from within. Intergranular penetration is a galvanic action which takes

place between the different metals in alloys. Chemical or electrical action may take place between the crystals so that one or both are eaten away which reduces the strength of the metal until failure takes place.

Stress corrosion or stress corrosion cracking occurs when a particular component is subjected to both high tension stress and corrosive conditions. This shows up as cracking in the area of maximum stress. Aluminium brass and magnesium alloys are particularly susceptible to this type of corrosive attack and failure.

Perhaps one of the better known types of corrosion is that of electrolytic action between dissimilar metals. The two metals and moisture (especially salt water) act much like a small electric battery setting up a potential difference which causes both the metals to deteriorate quickly. A white salt-like growth appears in the region of the join of the two metals similar to the corrosive salts found on battery terminals and is hence easily seen.

REMEDIES

We can now recognize the more common forms of corrosion which we as aircraft users are most likely to come across during inspections. Some are easy to see especially in their advanced state, while others are not so easily seen. In nearly all cases of advanced corrosion, component change will be essential but this type of remedial action is one of "Closing the stable door after the horse has bolted". It is a far more effective action if corrosion can be prevented from the beginning and this can be done in various ways.

Wherever possible an anti-corrosive treatment is carried out on quickly corroding metals which are subjected to conditions which will aggravate corrosion. The methods used are numerous and include those such as treatment with a chemical or some chemical mixture to keep air and moisture from direct contact with the surface – paint, lacquer, wax, ketones, oil or other similar materials are commonly used. To protect against electrolytic action a good waterproof non-conducting insulation is provided whenever dissimilar metals are joined together.

Another method of corrosion prevention is to coat metals which corrode quickly by one which corrodes slowly, ie, anodizing, aluminium cladding, nickel-plating, copper-plating, cadmium-plating or chrome-plating are examples of metallic coatings.

The many protective coatings, coverings and platings used are quite useless as effective prevention media against corrosion if care is not taken with components so treated. Scratches and other forms of damage cause localised corrosion since they leave small cavities which tend to draw and hold moisture. The many areas which for one reason or another are not anti-corrosive treatments, we may expect to be targets for more regular inspections. These are areas where corrosion is most likely to attack first and also deteriorate fastest.

It can be seen that corrosion control requires great care and much work. Thorough systematic inspections and keeping the aircraft clean are the keys. Check all unpainted areas, especially any area where moisture collects; look for areas where dissimilar metals are in contact. If the aircraft is exposed to salt air or salt spray, wash it frequently with an abundance of fresh water. If intergranular corrosion is suspected check with ultrasonic testing equipment and finally use only paint strippers and cleaning agents specifically approved for the job.

Air Ministry records show that no major or minor accidents have been attributed to corrosion. This can only mean that inspection and servicing by servicing personnel has been good. However, there is no room for complacency as Special Occurrence Reports show that corrosion has caused the failure or malfunction of numerous components. Records are to hand that every month in Aden, aircraft wheels to the value of £5,000 are scrapped because of severe corrosion. This staggering figure of damage to only one component in one area will give some idea how real and costly the existence of corrosion can be.

The number of occurrences appears to be on the increase and therefore it must be the aim of all tradesmen concerned with aircraft servicing to be continually on the alert for signs of corrosion.

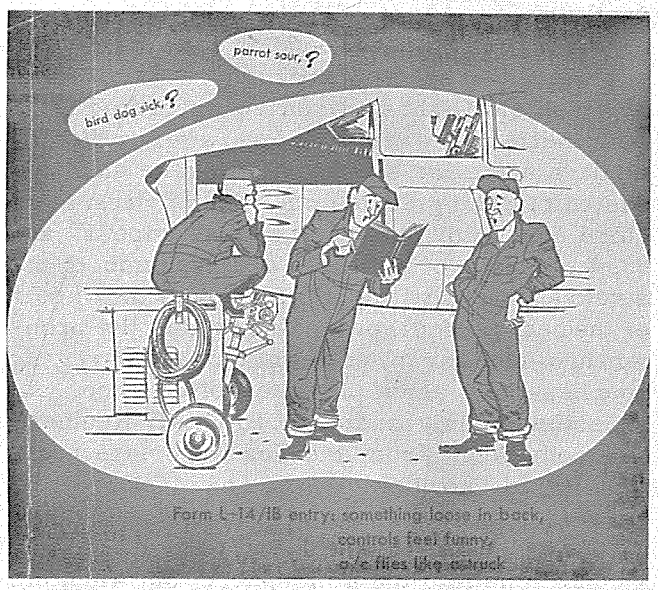
THE WORD THE BOOK AND THE YIK

By F/O JW Faulds in "Flight Comment"

Each year, the Air Works wastes beaucoup manhours, and sees its birds needlessly kept out of commission due to a sad lack of the Word. The Word is inscribed indelibly on the rosy-hued pages of RCAF Form L-14/1B, ie, the major unserviceability and rectification sheet of an aircraft log, henceforth referred to as the Book. When used correctly, the Word wields great power. Drivers-airframe can make it known of the lack of poop in the power plant, complete silence of the oracle called wireless, paralysis in the little black pole which waggles the wings, and many other sicknesses which afflict their fliegenmaschinen during flight. The technical fixers, unbenders, and adjusters can record for posterity the wonders waxed by their medicines and spells in curing the sick charges, and open the eyes of the great witch doctor, the Seniorizing NCO, to the extent of their magic. These things, and many more, are wrought through the workings of the Word.

As you can see, the Word is an excellent communicator and is even more effective when used in conjunction with the Yik. The Yik is a small session which should take place between the aircraft jockey and the aircraft keepers whenever either one has occasion to put the Word in the Book. It is invaluable in opening the eyes of the blind and piercing the ears of the deaf. Happenstance, he doesn't dig the Word – the baffled technician can beget a crystal-clear image of the bird's ailment from the illiterate pilot by means of the Yik. By the same token, many a happy pilot has bored his way through the ozone supremely confident in the tenacity of the technical bubble gum holding the thing together, because just prior to leaping off, his crew chief had passed that info along through the medium of the Yik.

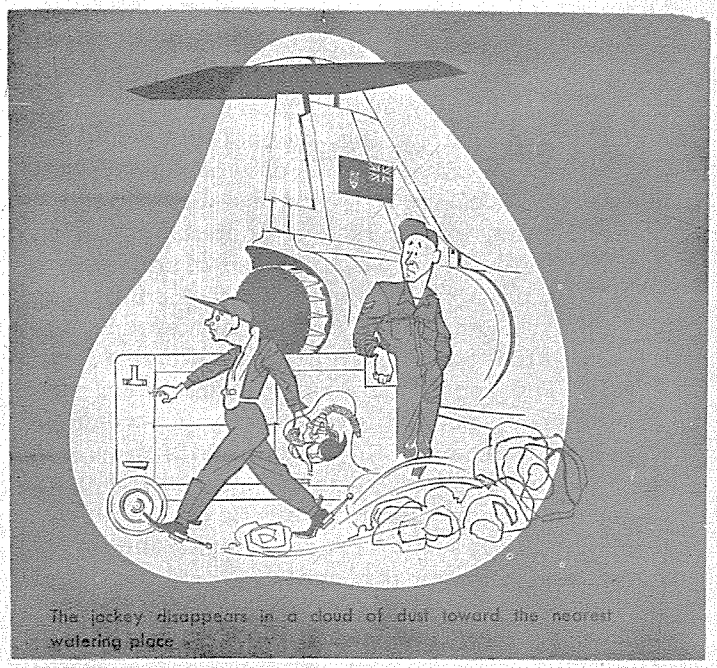
If the Word plus the Yik are so effective, how come the wasted manhour bit? Like every other part of the system, the Word is subject to many illnesses; all of them are human-induced. Many words can be seen in the Book suffering from acute attacks of Illegibility or Common Chicken Scratch. Other Words suffer from frequent bouts of that dread tropical disease "Vaguey-Waguey" which in recent years has shown signs of affecting the Yik also. Yik symptoms can be recognized by cries of: "I'm



not sure, but it just doesn't feel right"; or "I don't know, but I think I fixed it"; or, "I can't remember, but I must have checked it". These symptoms are repeatedly accompanied by sheepish grins or shrugged shoulders and nothing further can be gained. Word symptoms include such goodies as: something loose in back – controls feel funny – a/c flies like a truck – patch put where crack was – something loose tightened, ad idiotum. The only known cure is the swift application of the RCAF standard, boot, leather, black to the centre of the empennage of the disease carrier.

Galloping Hot Rock Tigerism is a plague which preys constantly on the Word, and which will be explored at some length in order to show the horrifying results of a deteriorated Word. The disease is most often spread by some transient sweeper of the skies who dashes off a careless scribble in the Book while flexing his G-suit, spitting in his hard hat, and snarling at the assembled beetle-bashers about cons, and breaks, and six o'clock and other unintelligible items. He usually foregoes a Yik and disappears in a cloud of dust toward the nearest watering place, leaving the fixers and unbenders puzzling over such juicy morsels as: "bird dog sick, parrot sour, binders weak." This normally happens on a Friday afternoon, and by the time the disciples of all trades have had a bash at deciphering this menagerie, and finally seek aircrew aid, they find their own birdmen thundering over the horizon towards the oasis, waving thirsty "au revoirs". In desperation, for the weekend is rapidly shrinking before their eyes, our boys root around in the darkest recesses of the canteen until they unearth some grizzled old flight sergeant who secreted himself there three years before after suffering through a similar situation. When he has been dusted off, the grizzled one will duly translate "bird dog" into "automatic radio compass" and 83.4 per cent of the time will succumb to the strain and quietly fling himself under the wheels of the nearest fuel bowser. Now that the problem has been narrowed down, our stalwart gang reaches once again into the coffee shop, and unceremoniously snatches LAC AE Neuman, Telecom Tech, from the floating bridge game (otherwise known as pontoon). Our worthy wirelessman, without much of a diagnosis to work on, will cast voltage spells and mutter incantations into the atmosphere, but when his bag of tricks has been exhausted, he can do no more than counter this evil scourge of the Word with another equally slimy and distasteful disease.

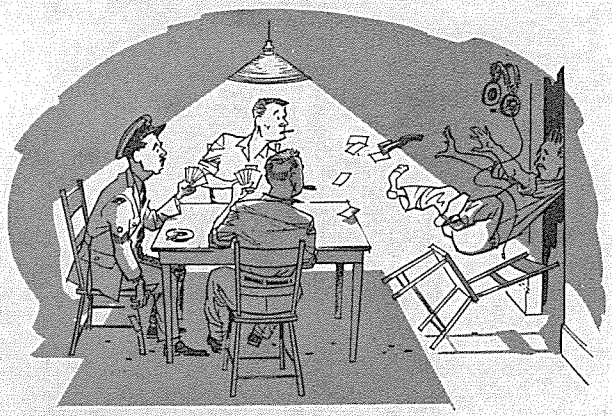
Enter now the dread GCS, a ravager of the Word that causes aircrew to weep and AM-Sups to cry out in anguish. In neat printed hand, our telecom man makes "ground checked serviceable" opposite the sick-hound report. He may have checked every bone in the bird dog's body or he may have had equipment enough only to check certain parts, but with such an entry, the next radio man to investigate the next snag will have to start at the beginning again. The BFI boys on Monday mornings will have nothing special to look for, and the pilot will probably make like our hero.



The jockey disappears in a cloud of dust toward the nearest watering place.

At this point, we will endeavour to show the necessity for believing in the Word from the pilot's standpoint, and for ensuring that the Word is indeed true when entered in the Book from the ground troops standpoint. The original instigator of the problem usually arrives back from the gaiety and light of the neighbouring Metropolis at the crack of dawn on Monday anxious to get his beast back to the home patch because they need it for Zulu, or a fly-by, or something equally minor. Diverting a nervous glance from the murky atmosphere wherein not

even the feathered jobs are flying, he notes the rectification to his nav aid and immediately constructs a purple snit of great magnitude whilst casting dispersions upon the ancestry of radio men, since the days of Marconi. He is so enraged that he roars off without consulting the rest of the Words in the Book or having a quiet Yik with the troops who worked all day Saturday in the rain to make sure that everything actually was O. K.



LAC AE Neuman unceremoniously snatched from the floating bridge game (otherwise known as pontoon).

Twenty minutes later, our fire-eater will be choking in his mask as he notes his oxygen needle pegged at the empty mark. A leak? No, our little man didn't check the Oxygen Word, which wasn't there anyway because someone had lost the adaptor. On the other hand, that harassed old sergeant at the desk had signed the Word indicating the kite as ready for the air, along with the other two dozen from his own outfit which his boys were getting unplugged and unchocked in p r e p a r a t i o n for the early morning frag order, while the EO was riding him on account of the Unimog batteries were dead, etc, etc!

What the entire parable boils down to is that the Word is only as good as its man. Concise Words are indeed admirable, but they must get the picture across, so if you can't be concise, take all the paper you need to be clear and comprehensive.

Pilots, just consider that two minutes of thought prior to one minute's writing might put the bird back in the air three hours faster.

Techs, remember that if more info is required on the next flight, it can be requested via the Word, and a short list of what's been done makes more sense to the next man working on the snag than GCS.

NCO's, d o n ' t forget that aircrew have faith in the Word and they're counting on you to guarantee it.

Above all, on both sides, we've got to have more Yik!

MORE INHOUSE MAINTENANCE NOT IMPROBABLE

The DOD Equipment Readiness and Maintenance Council will look into the proper distribution of inhouse versus contract maintenance. This will not necessarily mean loss of defence contracts but shifts for certain equipment.

Contract maintenance distribution currently varies widely from Service to Service because their missions require different combat equipment. Example: Helicopters are support equipment to Air Force, combat systems for Army and Marines. Here are the latest developments:

USAF shifted tremendous workloads, including spares, from depots to organizational maintenance shops after 66-1 revealed many jobs could be done at base level.

USAF is pulling its own maintenance on combat equipment, farming out work on support equipment.

Army and Navy are s l o w l y adopting a similar philosophy and particularly N a v y is doing large share of first and second echelon maintenance inhouse, afloat.

OSD has not yet issued a formal policy, but there is a strong feeling that at the organizational maintenance level Services should retain a large repair capability.

-Armed Forces Management (USA)

Suggestions Received

The following suggestions have been submitted by military or civilian personnel in the Corps. Some will be adopted and many will be 'shot down' for various reasons. However, they are the best evidence that RCEME people are constantly using their heads.

These files were received in DEME during January but the publication of the particulars here does not in any way imply their acceptability.

Suggestor	Suggestion
Mr WEM Allender	Tool for removing pulley on air compressor of M62 Wrecker
Mr JA Beugin (3)	That a conventional thermostat be installed in the aux engine of Centurion tanks
	Modification to engine exhaust system on Centurion tanks
	Replacement of gauges in Meteor engine thermometer and engine pressure gauge
Cpl JN McCarney	Modification to main engine of Centurion tanks
Mr WA Webster (2)	Centurion tank clutch cross-shaft bearing seals
	Installation of oil level indicator in Centurion tanks
Mr FA Harkes	Locking device for hydraulic HIAB cranes on 2 1/2 ton cargo trucks
Ssgt RC Brimmage	Supplying of paint in spray can for instrument shop
Mr JA Donahue	Puller for removing the drive end bells with bearing on SMP vehicle generators

Colonel JR Dunlop Trophy

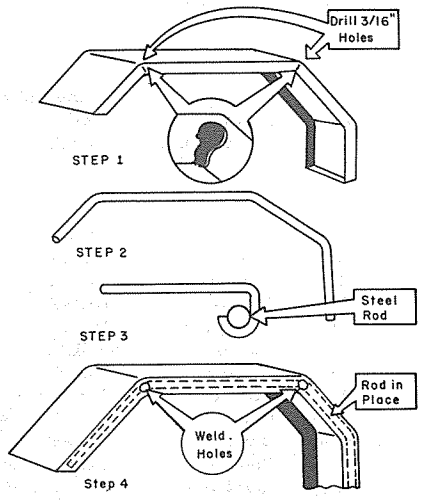
The DEME (AHQ) Bowling League last year offered a new trophy to be awarded to the league champions.

Mrs J.R. Dunlop kindly gave her permission for it to be called the "Colonel J.R. Dunlop Trophy" in honour of her late husband who died in January, 1962.

The trophy was first won by the Comets, composed of Capt JE Brown, Cpl JAA Perreault, Mrs M Treleaven, Mrs M Brown and Maj JM Treleaven.

REPAIRING FENDER CRACKS ON TRUCKS 5 TON

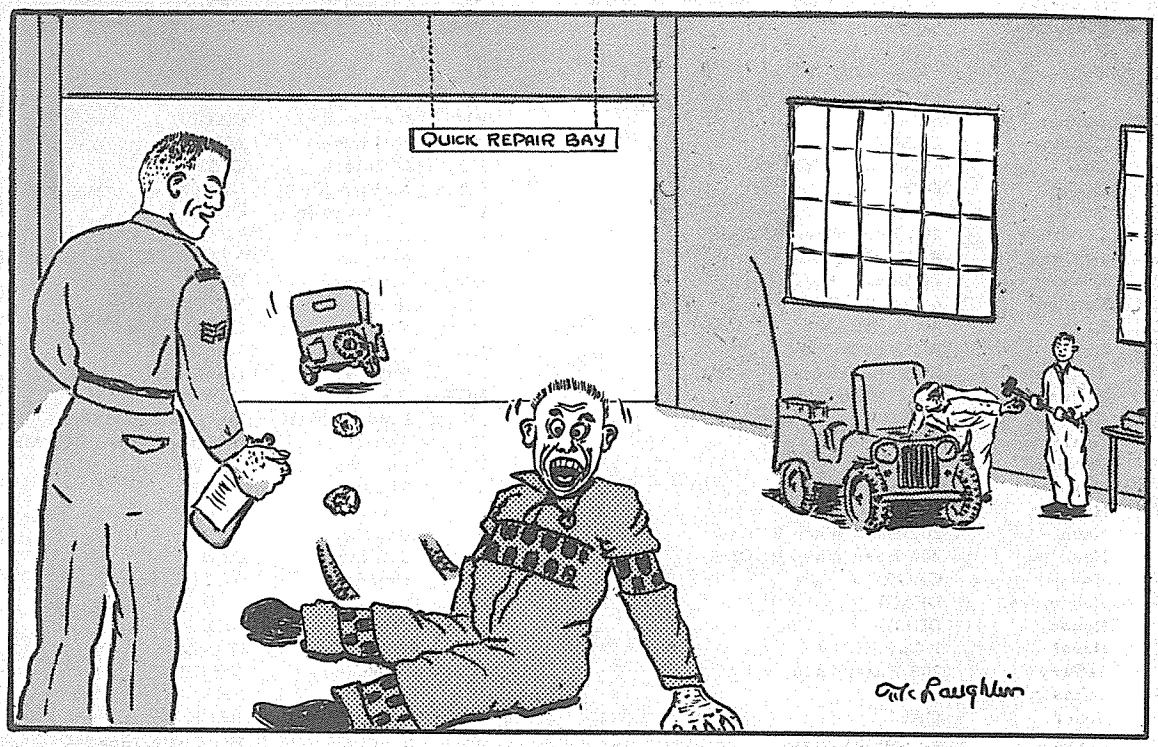
Cracked fenders on 5 ton trucks is an old story. Cracks, caused by vibration, strain and distortion, start at the bottom corners and if not stopped will creep across the top of the fenders.



A repair procedure was published previously in a US Army Technical Bulletin and is republished to inform those who may not have read the original and refresh the memory of those who did. The procedure is unchanged and should be followed whenever cracks appear; or the strengthening rod may be welded in place to prevent cracks from starting.

PROCEDURE

1. Drill 3/16 inch hole at the end of each crack to stop spreading.
2. Shape a 5/16 inch cold-rolled steel rod to fit fender.
3. Insert bent and shaped rod on inside roll of fender.
4. Weld rod along fender to a length of 3 inches on each side of each corner and from the ends. Weld rod along any additional cracks.
5. Weld cracks and drilled holes.
6. Clean, prime and paint all welds.



NOW WILL YOU STOP TAKING SIESTAS UNDER VEHICLES?

WHO'S WHERE

As of 31 Jan 1964

BRIGADIERS

KH	McKibbin	Comd HQ West Ont Area

COLONELS

WS	Hunt	Camp Shilo
EC	Mayhew	AEEE
A	Mendelsohn	DEME
GW	Thompson	202 Base Wksp RCEME
KR	Ward	RCEME School

LIEUTENANT COLONELS

VW	Bethel	DSO&P
GW	Bruce	DEME
DA	Campbell	DEME
DG	Carlyle	DEME
GG	Cavaghan	D Pers
HL	Cohen	AEEE
KF	Collins	AEEE
JC	Currie	RMC of S
WM	Dalrymple	204 Base Wksp RCEME
CMR	Elmsley	DEME
H	Goodfellow	Comd EME Wescom
WG	Hamilton	Comd EME Cencom
RHC	Hodgson	DEME
EC	Ilott	AEEE
GT	Kirk	Comd EME Eascom
AHR	Lewis	DMCM
AGM	Maitland	Cdn Delegation MAS (CALE)
AL	Maclean	DEME
JH	MacLean	AEEE
WJ	Owens	DEE
CG	Provan	CASC
AM	Reid	DMT
ANP	Roberts	DEME
HM	Robinson	Comd EME Quecom
FJ	Sergi	NATO HQ
JP	Sherren	DEME
DJ	Tidy	DEE

MAJORS

J	Adams	202 Base Wksp RCEME
BE	Babcock	204 Base Wksp RCEME
P	Bateson	4 Fd Wksp
CH	Betts	DEME
JC	Boughton	HQ CBUE
GR	Burton	204 Base Wksp RCEME
FW	Chapman	Pers RCEME
HW	Chapman	RCEME School
JF	Clarabut	HQ Cencom
BC	Clerke	DEE
EW	Cole	4 Coy RCEME
FE	Cooper	13 Coy RCEME
KLF	Coupland	AEEE
JN	Courtney	CAS(W)
BB	Cox	8 Coy RCEME
EB	Creber	DEP
AM	Croft	AEEE
JJE	Cuddihey	202 Base Wksp RCEME
LA	Daviss	RCEME School
BM	Diebert	14 Coy RCEME
FL	Demone	6 Coy RCEME
WE	Ellis	3 Coy RCEME
HHE	Erb	RCEME School
RF	Fendick	RCEME School
DH	Fraser	2 Fd Wksp
JJ	Garnett	CALE
DV	Geary	CALE
SA	Girdler	DEME
WH	Glover	RCEME School
WJN	Haggins	CJATC
HV	Hann	202 Base Wksp RCEME
TR	Heal	204 Base Wksp RCEME
CB	Hellyer	CAORE
EF	Hendricks	DEME
HW	House	DEME
CA	Hurst	7 Coy RCEME
AJ	Jeffery	202 Base Wksp
FG	Johnson	DEP
EG	Jones	CALE
KR	Joslin	13 Coy RCEME
FR	Kaye	HQ Wescom
KT	Kennah	DEME
VD	Kenyon	2 Coy RCEME
HLM	King	AEEE
JS	Kitto	RCEME School
CG	Lawrence	DEME
JW	LeLacheur	CALE (RMC of S)
RW	Libbey	DEME
JL	Loughridge	1 Coy RCEME
LH	Love	AEEE
RL	MacDonald	204 Base Wksp RCEME
ALD	MacDonell	1 Fd Wksp
RH	MacLeod	CADEE
JD	McDougall	AEEE
RL	McIntosh	CADEE
RA	McKay-Keenan	CAS(W)
HE	McLaughlin	DEME
GP	Miggins	12 Coy RCEME
CR	Morgan	5 Coy RCEME
DR	Mowbray	DEME
DA	Nicholson	HQ Eascom
PH	North	CALE
GL	O'Brien	CAS(W)
R	Peters	DEME
HCR	Pfeiffer	DEE
JN	Pinder Moss	India and Pakistan
HA	Popkin	202 Base Wksp RCEME
CG	Racicot	HQ Quecom
W	Rhodes	AEEE
RC	Rivers	56 Inf Wksp
M	Ruscher	CALE
LA	Sainsbury	DEE
DA	Saunders	RCEME School
GD	Savage	11 Coy RCEME
IC	Scarlett	DEE
RN	Shaw	EBS Bn
WR	Shaw	HQ CBUE
JO	Sheehan	DEE
JL	Sloan	AEEE
WG	Svab	HQ CBUE Incr "A"

MAJORS

AR	Thomsen	16 Coy RCEME
JM	Treleaven	DMCM
JD	Trevithick	AEEE
PA	Tuck	US Armed Forces College Norfolk, VA
RW	Vollett	CAS(W) US Army Chem School
EA	Williams	10 Coy RCEME
WR	Willing	DEME
GA	Wright	DEE
B	Yarymowich	ATOB

CAPTAINS

AM	Adams	RCD
KI	Anderson	RCEME School
LW	Armstrong	2 Coy RCEME
CE	Ball	204 Base Wksp RCEME
NE	Birchard	DEME
JMF	Bourassa	CALE (RMC of S)
GN	Brent	DEME
JE	Brewster	11 Coy RCEME
JE	Brown	AMC Rockcliffe
PL	Burcombe	56 Cdn Inf Wksp
FJ	Burton	202 Base Wksp RCEME
CO	Bush	HQ Cencom
LN	Bydal	CAS(W) Redstone Arsenal
LJE	Byer	1 Tpt Coy RCASC
JL	Calvert	8 Coy RCEME
JNR	Campbell	6 Coy RCEME
WM	Campbell	CASC
AB	Cantlon	RCEME School
FR	Carruthers	RMC
G	Charles	224 Wksp
TM	Chell	CAS(W)
JE	Coates	208 Wksp
WG	Collins	RCEME School
RDL	Connell	CJATC
JH	Cooper	4 Fd Wksp RCEME
DH	Cumming	RCEME School
DH	Curling	FGH
PR	Dack	RCEME School
JD	Delaney	14 Coy RCEME
FF	Doherty	DEME
JGR	Doucet	4 RCHA
OA	Edmond	204 Base Wksp
AS	Etter	2 Fd Wksp RCEME
RJ	Francis	EBS Bn
AM	Gilbert	DEME
FB	Goring	1 Coy RCEME
RE	Goulding	CASC
NA	Graham	HQ CBUE
PM	Graye	4 Fd Wksp RCEME
GE	Grainger	AEEE
JR	Griffin	AEEE
WJA	Groom	DEME
GM	Hagan	RCEME School
DV	Hampson	CALE (RMC of S)
PEV	Hansen	CADEE
RT	Hare	11 Coy RCEME
HJ	Hellard	12 Coy RCEME
FA	Hlohosky	CALE (RMC of S)
O	Howard	202 Base Wksp RCEME
FG	Hutson	CJATC
WR	Hyman	CALE (RMC of S)
AF	Johannes	4 Fd Wksp RCEME
MC	Johnston	AEEE
ID	Isbester	16 Coy RCEME
JJ	Kane	4 Coy RCEME
JR	Kaye	215 Wksp
GW	Keays	Ld SH (RC)
JJ	Klinec	DEME
NE	Laviolette	HQ 4 CIBG (BEME)
WF	Lucano	Queens University
AM	MacDonald	RCEME School
JA	MacDonald	RMC
AJ	MacGillivray	8 CH
RMG	MacKenzie	2 Tpt Coy RCASC
E	MacMillan	207 Wksp
DM	Maher	212 Wksp
MG	Masuda	Queens University
GD	McCulloch	Queens University
AL	McEachern	220 Wksp
JS	McIntyre	DEME
MD	McKinlay	DEME
CA	Millar	11 Coy RCEME
HJ	Millen	56 Inf Wksp
RW	Miller	3 RCHA
TME	Mimee	RCEME School
HG	Morgan	4 Fd Wksp
JL	Moyse	204 Base Wksp RCEME
PB	Nicholson	CASC
WH	Norton	Pers RCEME
JF	O'Connor	202 Base Wksp RCEME
JR	O'Neill	DEME
FA	Ouimet	5 Coy RCEME
TW	Oxley	HQ BC Area
TR	Palfrey	220 Wksp
JE	Peacock	DEME
WC	Perrin	2 RCHA
WC	Perry	202 Base Wksp RCEME
JR	Peters	10 Coy RCEME
PP	Pospisil	1 RCHA
CH	Putt	DEME
RH	Purton	DCER
JR	Raby	4 Fd Wksp RCEME
JA	Remington	1 Fd Wksp RCEME
JA	Richards	RCEME School
HL	Robinson	3 Coy RCEME
EA	Rochefort	229 Wksp
V	Roddick	18 Coy RCEME
GS	Rippengale	11 Coy RCEME
HA	Rosson	DEME
WGL	Russell	202 Base Wksp RCEME
RB	Screaton	CASC
WJ	Shearing	DEME
WD	Sneddon	RCEME School
JA	Stott	56 Cdn Inf Wksp
EJ	Stow	DEME
GW	Swallow	DEME
RH	Thorn	RCEME School
WA	Thomas	RCEME School
HK	Warren	RCEME School
DE	Wilson	EBS Bn
BH	Wright	DEME

LIEUTENANTS

GW	Anscomb	RCEME School
GF	Bews	AEEE
JF	Boudreau	RCEME School
W	Boychuk	5 Coy RCEME
FN	Brodie	7 Coy RCEME
HD	Byer	3 Coy RCEME
CA	Churchill	AEEE
DL	Clarke	14 Coy RCEME

LIEUTENANTS

BL	Code	RCEME School
EM	Conway	8 Coy RCEME School
RF	Conway	HQ Wescom
WWD	Cruden	RCEME School
JS	Davies	HQ CBUE
RE	Deleeuw	16 Coy
JHJG	Delisle	10 Coy RCEME
JA	Dixon	RCEME School
JP	Durocher	5 Coy RCEME
MJJR	Giroux	5 Coy RCEME
GWE	Godson	5 Coy RCEME
GT	Hammond	D Org
TW	Healy	56 Cdn Inf Wksp
KW	Henderson	DEME
LM	Harvey	202 Base Wksp
JH	Hayward	202 Base Wksp
DV	Hill	4 Fd Wksp
JAFL	Gagnon	RCEME School
DC	Kaufman	7 Coy RCEME
HG	Kayne	202 Base Wksp
JMA	Lachance	4 Coy RCEME
WW	Laird	8 Coy RCEME
FH	Leach	CJATC
JLRL	Langevin	8 CH
JPA	Leger	2 Fd Wksp
FG	Legg	Ld SH (RC)
LA	Leflar	220 Wksp
JPR	Levesque	2 Fd Wksp
JW	Lowthian	3 Coy RCEME
GE	Maguire	EBS Bn
GK	Maguire	DEME
RB	Manning	CJATC
AE	Marble	RCEME School
WR	McCaughan	HQ East Comd
JG	Meek	10 Coy RCEME
HA	Patterson	DEME
RG	Patterson	7 Coy RCEME
LF	McLeod	HQ Wescom
DD	Nikiforuk	1 Fd Wksp
CA	Penny	CJATC
PG	Pothier	HQ CBUE
CF	Potter	1 Fd Wksp
GA	Riley	10 Coy RCEME
HG	Ray	RCEME School
WD	Roche	4 Coy RCEME
JGHL	Roy	1 Fd Wksp RCEME
CE	Rooney	214 Wksp RCEME
AG	Rose	16 Coy RCEME
JAP	Rouillard	202 Base Wksp
J	Sanders	LWOP
RH	Seguin	RCEME School
BH	Simms	13 Coy
VB	Suddaby	11 Coy (214 Wksp)
JH	Spackman	2 Fd Wksp RCEME
WRL	Springford	1 Fd Wksp RCEME
DL	Smith	RCD
J	Tatham	215 Wksp RCEME
JT	Thompson	HQ CBUE
RL	Walker	202 Base Wksp
B	Wong	202 Base Wksp

SECOND LIEUTENANTS

KD	Baird	RCEME School
JDG	Choquette	RCEME School
JI	Hanson	10 Coy RCEME
B	Tomlinson	RCEME School

UK EXCHANGE OFFICERS
REME

Maj RE	Jenkins	DEME
Maj DT	Tremeer	RCEME School

ROTP CADETS

J	Allaire	Laval
WD	Armstrong	RMC
CJ	Belisle	RMC
DL	Black	NB
R	Boyko	RMC
RG	Bell	RMC
RE	Betzner	U of Sask
RP	Britt	McGill
A	Boucher	Laval
R	Bouliane	RMC
HA	Bruneau	RMC
JJR	Carrier	RMC
FE	Collinge	RMC
JT	Cooper	Sask
JGD	Crookston	Toronto
PJA	Charlebois	RMC
GW	Davies	RMC
DG	Dinsmore	RMC
JCG	Dupont	CMR
TJ	Enright	CMR
RR	Fraser	RMC
RJ	Ferguson	Toronto
RN	Fischer	RMC
JJ	Fyfe	RMC
JJC	Girard	RMC
PAR	Glynn	RMC
EC	Hague	CMR
LLA	Hellemans	McGill
JDJPR	Lafleur	CMR
GE	Lapointe	RMC
URA	Leblond	Ecole Poly
JR	Lamp	Carleton
WA	Mersereau	NB
HP	Martel	RMC
PJJ	Marchildon	RMC
PC	Marriner	Dalhousie
HM	Merklinger	RMC
JGG	Nappert	CMR
A	Nellestyn	RMC
OS	Oishi	Alberta
JC	O'Rourke	McGill
TJ	Panke	Manitoba
V	Pergat	McGill
JAM	Perreault	CMR
RV	Potter	CMR
TR	Patterson	NB
NE	Pothier	NSTC
RJ	Ridlington	CMR
RGJ	St-Aubin	Assumption (Windsor)
LFG	Scagnetti	Toronto
TW	Strang	Alberta
GG	Stewart	RMC
RG	Taylor	RMC
MNM	Trevors	NB
JNJA	Turcotte	Montreal
AD	Tupper	Mt-Allison
GR	Walker	RMC